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No. 3427. SATURDAY, SEPTEMBER 11, 1926. **Price 1/3**

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Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

CAPE OF GOOD HOPE (WESTERN) BRANCH.—A case night arranged by Mr. T. Lindsay Sandes and Dr. G. B. Wilkinson will be held at 35, Wale Street, Capetown, on Friday, September 24th, at 8 p.m.

SURREY BRANCH: REIGATE DIVISION.—The following programme has been arranged for the session 1926-27: Wednesday, October 6th, 1926, at 7 p.m., Annual Dinner, White Hart Hotel, Reigate, followed by Mr. Percy Sargent, C.B., on The management of patients with brain tumours. Wednesday, November 10th, at 4.30 p.m., Clinical Meeting at the East Surrey Hospital. Tuesday, December 14th, at 8.45 p.m., Dr. H W. Barber: The treatment of some common diseases of the skin. Tuesday, January 11th, 1927, at 8.45 p.m., Dr. Stoddart: The certification of mental patients. Tuesday, February 8th, at 8.45 p.m., Sir William Willcox, C.B., C.M.G.: The etiology and treatment of fibrositis (chronic rheumatism). Tuesday, March 8th, at 8.45 p.m., Dr. Stanley Dodd: Gynaecology. Wednesday, April 13th, at 4 p.m., Clinical Meeting at Caterham Cottage Hospital. May 11th, at 4 p.m., Annual Meeting. All meetings will be held at the East Surrey Hospital unless otherwise stated.

VACANCIES.

BIRMINGHAM MATERNITY HOSPITAL.—(1) Honorary Assistant Physician, and (2) Honorary Anaesthetist.

BOOTLE BOROUGH HOSPITAL.—(1) Senior Medical Officer. (2) Two Junior Medical Officers. Males. Salary for (1) £150, and for (2) £125 per annum each.

BRIGHTON: ROYAL SUSSEX COUNTY HOSPITAL.—House-Surgeon (male). Salary £150 per annum.

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EXETER: ROYAL DEVON AND EXETER HOSPITAL.—(1) House-Physician. (2) House-Surgeon. (3) Casualty Officer. Salary for (1) and (2) £130, and for (3) £100.

HAMPSTEAD: PARISH OF ST. JOHN.—Junior Resident Assistant Medical Officer at the New End Hospital. Salary £150 per annum.

LEICESTER ISOLATION HOSPITAL AND SANATORIUM.—Resident Medical Officer. Salary £350 per annum.

LEICESTER ROYAL INFIRMARY.—House-Surgeon. Salary at the rate of £125 per annum.

MANCHESTER BABIES HOSPITAL, Burnage Lane, Levenshulme.—(1) Resident Medical Officer. (2) Resident Clinical Assistant. Salaries at the rate of £125 and £50 per annum respectively.

NEWCASTLE-ON-TYNE: HOSPITAL FOR SICK CHILDREN.—Honorary Assistant Surgeon.

OSWESTRY: SHROPSHIRE ORTHOPAEDIC HOSPITAL.—Two House-Surgeons. Salary £150 per annum.

OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—Resident Medical Officer to the Osler Pavilion for the Treatment of Tuberculosis. Salary at the rate of £120 per annum.

ROCHDALE INFIRMARY AND DISPENSARY.—Junior House-Surgeon (male). Salary £200 per annum.

ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Honorary Pathologist. Honorarium £150 per annum.

ROYAL MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—(1) Resident Medical Officer. (2) Resident Surgical Officer. (3) Assistant Medical Officer for Out-patient Department. Salary at the rate of £120, £80, and £150 per annum respectively.

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, Great Portland Street, W.1.—House-Surgeon (male). Salary £150 per annum.

ST. HELEN'S COUNTY BOROUGH.—Assistant Medical Officer of Health (male). Salary at the rate of £650 per annum, rising to £750.

ST. HELEN'S HOSPITAL.—Resident Medical Officer. Salary £250 per annum.

ST. JOHN'S HOSPITAL, Lewisham, S.E.13.—Casualty Officer. Salary £100 per annum.

ST. MARY'S HOSPITAL, W.2.—Assistant Medical Officer in Charge of *X*-Ray Department.

ST. PETER'S HOSPITAL FOR STONE, ETC., Henrietta Street, W.C.2.—House-Surgeon. Salary at the rate of £75 per annum.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone Road, N.W.1.—House-Surgeon. Salary at the rate of £100 per annum.

SEAMEN'S HOSPITAL SOCIETY, Greenwich.—House-Physician and House-Surgeon at Dreadnought Hospital. Salary £110 per annum with proportion of fees.

SHEFFIELD: ROYAL INFIRMARY.—Assistant Casualty Officer. Salary at the rate of £80 per annum.

SUSSEX MATERNITY AND WOMEN'S HOSPITAL, Brighton.—House-Surgeon. Salary £125 per annum.

SYDNEY UNIVERSITY, New South Wales.—Professorship of Psychiatry. Salary £1,100 per annum.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House-Surgeon (male). Salary £250 per annum, *plus* extras.

WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester Gate, Regent's Park, N.W.1.—Junior House-Physician (male). Salary £100.

WEST LONDON HOSPITAL, Hammersmith Road, W.6.—(1) Physician. (2) Two House-Surgeons (males). Salary at the rate of £100 per annum each.

WEST NORFOLK AND KING'S LYNN HOSPITAL.—Resident Surgical Officer. Salary £400 per annum.

WESTERN OPHTHALMIC HOSPITAL, Marylebone Road, N.W.1.—(1) Senior and (2) Junior non-resident House-Surgeons. Salaries at the rate of £150 and £100 per annum respectively. (3) Honorary Assistant Surgeon. Honorarium 100 guineas per annum.

CERTIFYING FACTORY SURGEONS.—The following appointments are vacant: Measham (Leicestershire), Thame (Oxfordshire), Newhaven (Sussex). Applications to the Chief Inspector of Factories, Home Office, Whitehall, S.W.1.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—*Central London Ophthalmic Hospital*, Judd Street, W.C.1: Series of lecture demonstrations every afternoon for one month on all branches of ophthalmology. *Bethlem Royal Hospital*, St. George's Fields, S.E.1: Course in psychological medicine, beginning September 7th, every Tuesday and Saturday at 11 a.m. Copies of syllabuses of above courses and information on post-graduate work generally is obtainable from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

POST-GRADUATE HOSTEL, Imperial Hotel, Russell Square, W.C.1.—Wed., 9 p.m., Manipulative Surgery and the Bone-setter. Thurs., 9 p.m., The General Practitioner and the Medical Officer of Health.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Western Infirmary: Daily, 9.30 a.m., Clinical Medicine; 10.45 a.m., Clinical Surgery. Tues. and Thurs., 4 p.m., Radiology; 5.30 p.m., Venereal Diseases. At Royal Infirmary: Mon., Wed., and Fri., 9.15 a.m., Anaesthetics. At Ruchill Fever Hospital: Sat., 10 a.m., Tuberculosis and Infectious Fevers. At Royal Hospital for Sick Children: Mon., Wed., and Fri., 3.30 p.m., Surgical Diseases of Children. At Eye Infirmary: Mon., Wed., and Fri., 2 p.m., Diseases of the Eye.

British Medical Association.

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IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

SEPTEMBER.

14 Tues. London: Ethical Committee, 2.30 p.m.
16 Thurs. London: Insurance Acts Committee, 12 noon.
17 Fri. London: Public Health Committee, 2.30 p.m.
21 Tues. London: Organization Committee, 2.30 p.m.
22 Wed. London: Medico-Political Committee, 2.30 p.m.
23 Thurs. London: Journal Committee, 2.30 p.m.
28 Tues. London: Naval and Military Committee, 2.30 p.m.
29 Wed. London: Finance Committee, 2.30 p.m.
30 Thurs. Edinburgh: Scottish Committee.

OCTOBER.

6 Wed. Reigate Division: Annual Dinner, White Hart Hotel, Reigate, Mr. Percy Sargent on the Management of Patients with Brain Tumours, 7 p.m.
13 Wed. London: **Council**, 10 a.m.
21 Thurs. London: Conference of representatives of Local Medical and Panel Committees at B.M.A. House, Tavistock Square, W.C.1.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcement of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

MARRIAGES.

DAVIDSON—BRASH.—At Maxwelltown U.F. Church, Dumfries, on August 24th, 1925, John Polson Davidson, *M.C.*, M.B., Ch.B., to Jessie Ronald Brash, M.B., Ch.B. At Home, Deveron House, Clayton-le-Moors, October 29th and 30th, 1926.

GUTHRIE—HICKSON.—On August 28th, at St. Mary Abbott's, Kensington, Gerrans Leftwich Guthrie, son of the late Hugh Guthrie, Esq., and of Mrs. Phillips, to Sylvia Kema Hickson, M.D., M.R.C.P., daughter of Professor and Mrs. Hickson of 25, Barton Road, Cambridge.

WILSON—JOHNSON.—On August 26th, at the Parish Church, Alne, Yorks, Charles Haddon Wilson, M.B., Ch.B., son of Mr. and Mrs. C. C. Wilson, "The Hollies," Normanton, to Hope Evelyn Johnson, B.A.Cantab., niece of Dr. and Mrs. L. A. Johnson, "The Meads," Tollerton.

DEATHS.

ARMSON.—On August 21st, 1926, at "The Moat," Yoxall, Burton-on-Trent, Frank Greasley Armson, M.R.C.S., L.S.A., aged 63 years.

FRASER.—At Raipur, India, on August 19th, of cholera, Lieut.-Colonel W. J. Fraser, F.R.C.S.E., I.M.S., third son of the late John Fraser, Abbotsford, Ceylon, and Wolf Crag, Bridge of Allan, aged 45.

REID.—On August 21st, 1926, Dr. James Reid, late of Banbury, closest son of A. P. Reid, Belfast, Ireland, aged 43.

[The present issue being the Annual Educational Number, much current material is held over, and neither the "Supplement" nor the "Epitome of Current Medical Literature" is published this week.]

COINCIDENT DUODENAL AND GASTRIC ULCER.

(With Special Plate.)

BY

D. P. D. WILKIE, M.Ch., F.R.C.S.,

PROFESSOR OF SURGERY, EDINBURGH UNIVERSITY.

THE surgical treatment of duodenal and gastric ulcer is still the subject of controversy, and opinion is sharply divided as to the exact place which surgery should hold, and will ultimately maintain, in the treatment of this disorder. There is, however, an imposing accumulation of evidence of the curative action of a gastro-enterostomy in cases of duodenal ulcer. Collective statistics show that complete relief from symptoms follows in 85 per cent. of cases of duodenal ulcer following gastro-enterostomy. For gastric ulcer, on the other hand, this operation is much less successful, and most surgeons are agreed that when the ulcer is situated on the lesser curvature of the stomach a direct attack on it of one kind or another is essential for a lasting cure.

The object of this paper is not to analyse the causes of non-success following gastro-enterostomy for duodenal ulcer further than to point out the frequency with which a coincident ulcer is present in the stomach, an ulcer which is liable to escape observation unless a systematic search is made for it. During the three years prior to the war I examined in the *post-mortem* room 490 bodies for duodenal ulcer. In 41 bodies one or more duodenal ulcers were found—that is, in 8 per cent. In 5 cases one or more gastric ulcers were present along with the duodenal ulcers—that is, in 12 per cent. of cases of duodenal ulcer a coincident gastric ulcer was found (Fig. 1). Whilst, therefore, fully aware of the frequent association of ulcer in both stomach and duodenum, I confess to have omitted to make a systematic examination for multiple ulcers in all upper abdominal operations until five years ago, when the following case brought home to me the importance of a complete assessment of pathology at operation.

CASE.

A man, aged 28, had been operated on two years previously for a perforated duodenal ulcer. The perforation had been closed and the pelvis drained. For two months after the operation he had been free from symptoms, and then the typical periodic attacks of indigestion had returned.

At the second operation, performed in July, 1920, a chronic duodenal ulcer on the anterior wall of the duodenum, with considerable stenosis, was found. Posterior gastro-enterostomy was performed, and two months later the patient expressed himself as being relieved but not cured of his dyspeptic symptoms. In 1921 he returned still complaining of intermittent dyspepsia. A jejunal ulcer was suspected, and a third operation was carried out just one year after the second. No jejunal ulcer was found, the duodenal ulcer had healed, but high up on the lesser curvature of the stomach there was a large, chronic, indurated, penetrating ulcer, obviously of long standing. The base of the ulcer was burnt out with the cautery and the edge sutured and invaginated. For the five years since this operation the patient has been free of all symptoms.

It appeared to me to be quite clear that this patient had had all along coincident gastric and duodenal ulcers, and that until the last (third) operation treatment had been directed only to the latter. A direct attack on the gastric ulcer was followed by a symptomatic cure. Since this lesson I have made a systematic examination for gastric ulcer at all operations for duodenal ulceration. During this period I have operated on 300 cases of ulcer, and the results of the five years' experience are as follows:

	Male.	Female.	Total.
Duodenal ulcer alone	167	54	221
Gastric ulcer alone	17	20	37
Coincident duodenal and gastric ulcer	27	15	42
Totals...	211	89	300

Some interesting points emerge in regard to the sex and age incidence of ulcer from this series of 300 cases. The common occurrence of coincident gastric and duodenal ulcer is clear—namely, that in 16 per cent. of duodenal ulcer cases there was present a gastric ulcer as well; and in 53 per cent. of cases with gastric ulcer one or more duodenal ulcers were found. If the cases of coincident gastric and duodenal ulcer be excluded, we find that duodenal ulcer was exactly six times as frequent as gastric. In the male subject the proportion of duodenal to gastric ulcer was 9 to 1, in the female 2.7 to 1. If all ulcer cases be included, the proportion of duodenal to gastric ulcer is 3.3 to 1. In the male sex it is 4.4 to 1, in the female sex 2 to 1. We may fairly deduce from these figures that, given the factors predisposing to ulceration, the probable site of ulcer will be the first part of the duodenum and after this the lesser curvature of the stomach.

DIAGNOSIS.

It is often very difficult from the patient's history and ordinary clinical examination to be sure whether he is suffering from a gastric or a duodenal ulcer, or both. When, however, the pain comes on at varying intervals after food, whilst still displaying the periodicity so constantly found with ulcer, one has some grounds for suspecting that ulcers may be present in both stomach and duodenum. The *x*-ray picture after a barium meal is the real aid to accurate diagnosis. In the early cases the *x*-ray evidence of the gastric ulcer may be a little uncertain, and be confined to a slight irregularity of outline of the lesser curvature with some degree of spasmodic hour-glass contraction. In the later cases, where stenosis has occurred, the very typical picture of hour-glass stomach and duodenum leaves no doubt as to the diagnosis (Fig. 2).

TREATMENT.

There can be little doubt that under prolonged and efficient medical treatment many early cases of gastric and duodenal ulcer can be completely cured. More often than not, however, the patient either does not seek, does not get, or will not submit to the prolonged rest and strict dietary until he has had numerous attacks, which have led to definite organic changes in the gastric or duodenal wall. When such changes have occurred the hope of a lasting cure by medical measures alone is distinctly less, and if one course of medical treatment is followed by relapse operative measures should be considered. We are concerned here merely with the surgical treatment of coincident ulcers in the stomach and duodenum. From the experience of the 42 cases dealt with in this paper, in the treatment of which a considerable variety of surgical measures have been employed, I should, in the first place, divide the cases roughly into two classes:

1. Comparatively early cases with active ulceration but little or no stenosis.
2. Old-standing cases with marked stenosis, often in elderly people.

In Class 1 the operation must include the extirpation of the gastric ulcer, either by partial gastrectomy, excision, or cautery, together with some form of gastro-enterostomy. In Class 2 the clinical and the pathological picture are both dominated by the stenoses and their results, and anastomotic operations, without any direct attack on the ulcers, are followed by the most gratifying and lasting success. This latter fact is of importance, as in many cases the patients are old, thin, and feeble, and not well suited for drastic surgical procedures. In 18 of the 42 cases in this series the patients were over 50 years of age, in 3 cases the patients were over 70 years of age, yet all made excellent recoveries after multiple anastomotic operations.

It may be asked what safeguard we have against the malignant degeneration of the ulcer if such conservative measures are adopted. My experience has been that, whilst malignant disease may arise in a gastric ulcer (in one case of this series it was found and proved fatal), it does not arise in the cicatrizing type which leads to hour-glass contraction, and the risk of it may be regarded as a negligible factor in determining the operative procedure in these old-standing stenosing cases.

The correct method of dealing with cases in the first group, where active ulcers are present in both stomach

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FIG. 1.—"Opposing" duodenal ulcers and gastric ulcer on lesser curvature. (The usual sites of ulceration.)

FIG. 2.—Coincident duodenal and gastric ulcers with stenosis, showing hour-glass stomach and duodenum

and duodenum, is not an easy matter to decide. A resection of the whole ulcer-bearing area, whilst a logical procedure, is rendered difficult in many cases by the fixity of the duodenum. It was only carried out in two cases in this series. Simple gastro-enterostomy alone is insufficient, and will be followed by persistent symptoms in 50 per cent. of cases. Burning out the ulcer with the thermo-cautery, followed by invagination and a gastro-enterostomy, was carried out in 15 cases, and with uniform success. I confess to a pleasant surprise on hearing from the patients in this group of their freedom from all subsequent digestive trouble. So favourable were the reports in this group that I now regard the Balfour operation as that of choice for the early, active cases of coincident gastric and duodenal ulcer.

There were two deaths in this group of 42 cases. In one case death occurred suddenly on the tenth day, from pulmonary embolism. In the second case, that of an elderly lady, the gastric ulcer had perforated eight hours before operation, and death resulted from general peritonitis. A death rate of 4.8 per cent. cannot be regarded as high when it is considered that in many of these cases one is dealing with old and emaciated subjects.

The great variety of operations which were carried out in this series of cases is illustrated in Table I and Fig. 3.

TABLE I.—*Operative Treatment in 42 Cases of Coincident Gastric and Duodenal Ulcer.*

Operation.	No. of Cases.	Result.	Present State.
Posterior gastro-enterostomy ...	7	7 R.	3 perfectly well; 4 still complain of gastric symptoms.
Anterior gastro-enterostomy and lateral anastomosis	3	3 R.	2 very well; 1 still complaining.
Gastro-duodenostomy	1	1 D.	Death from pulmonary embolism on tenth day.
Excision of ulcer and posterior gastro-enterostomy	2	2 R.	1 very well; 1 late recurrence of symptoms.
Excision and anterior gastro-enterostomy	1*	1 D.	Death few hours after operation.
Excision and gastro-duodenostomy	1	1 R.	Patient very well.
Cautery and posterior gastro-enterostomy	15	15 R.	All very well.
Cautery and gastro-duodenostomy	1	1 R.	Very well.
Pyloroplasty	1	1 R.	Very well.
Double gastro-enterostomy and lateral anastomosis	1	1 R.	Very well.
Gastro-gastrostomy and posterior gastro-enterostomy	2	2 R.	Both very well.
Gastro-gastrostomy and gastro-duodenostomy	1	1 R.	Very well.
Gastro-gastrostomy and gastro-duodenostomy and duodeno-jejunostomy	1	1 R.	Very well.
Pyloric exclusion and gastro-enterostomy	1	1 R.	Very well.
Posterior gastro-enterostomy and duodeno-jejunostomy	1	1 R.	Very well.
Partial gastrectomy	2	2 R.	Both very well.
Exploratory operation	1†	1 R.	Death some months later.

* Perforated. † Malignant.

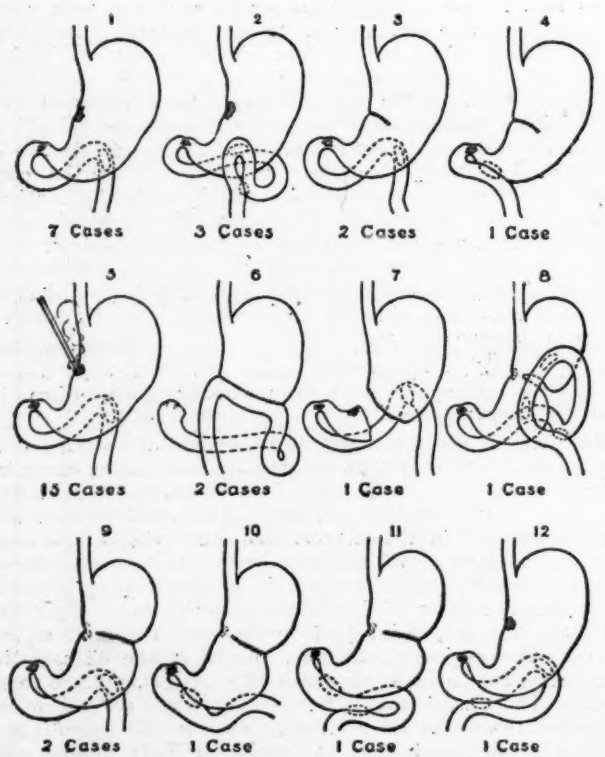

FIG. 3.—Diagrammatic drawings of operations carried out in the 42 cases dealt with. Below each diagram the number of cases so dealt with is stated.

Conclusions.

1. Coincident ulceration in stomach and duodenum is relatively common.

2. In this series it occurred in 16 per cent. of all duodenal ulcers and in 53 per cent. of all gastric ulcers.

3. Two groups of cases are to be distinguished when considering operative measures: (*a*) active ulcers without stenosis in relatively young people (below 50); (*b*) unhealed but cicatrized ulcers with stenosis in elderly subjects.

4. The Balfour operation is recommended for Class (*a*). Purely anastomotic operations give a lasting symptomatic cure in Class (*b*).

MAN AS THE INTERMEDIATE HOST OF THE TAENIA SOLIUM.

(With Special Plate.)

BY

E. J. H. ROTH, M.R.C.S.ENG., L.R.C.P.LOND., D.M.R.E.CAMB.,

CHIEF ASSISTANT IN THE X-RAY DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL, LONDON; RADIOLOGIST TO THE ESSEX COUNTY HOSPITAL, COLCHESTER.

INFECTION by the *Taenia solium* has become extremely rare in this country, and the recognition of the aberrant *Cysticercus cellulosae* stage of this intestinal parasite in man by radiological means is of interest.

The *Taenia solium* used to be commoner, and was described at a period when *x* radiations were not being employed in medicine, and it has not been found possible to discover a record of appearances which may be seen in radiograms when man becomes the intermediate host. The condition is well recognized, and not of rare occurrence at the present day in many parts of the world, notably in Germany, in some parts of America, and in India, and I hope that the publication of this case will give me access to additional information upon this interesting subject, and that I may receive references to cases which have been seen.

The tapeworm known as the *Taenia solium* is characterized by a scolex bearing four somewhat prominent suckers and hooklets, varying in number from twenty-six to twenty-eight. It is an extremely long parasite, and lies in the intestinal tract of man, who is the host, the intermediate host being the pig. The proglottides contain the ova, and as they ripen are discharged in the faeces, the ova retaining a certain motility, and are swallowed by the pig. The gastric juices of the intermediate host act upon the shell of the ovum and dissolve it, and the oncosphere, which is set free in the stomach, passes into the blood stream, whence it is carried all over the body. It may settle in the brain, either in its substance or in the meninges, in the lungs, in the heart, in the eye, but most commonly in the skeletal muscles. It rarely lodges in the substance of the liver. It soon becomes transformed into a clear elliptical cyst, measuring about a centimetre by half a centimetre, and if lying in muscle substance takes up a position with its long axis parallel to the fibres of the muscle, which it separates. It slowly degenerates and becomes calcified, and may become apparent and give rise to symptoms and signs. Osler reports a case in which hundreds of subcutaneous nodules proved to be calcifications of the *Cysticercus cellulosae*, and many cases in which these bodies

have been seen in the retina have been reported from the German clinics.

It happens, then, that man may become the intermediate host, and because of the consequences the condition is a serious one. There are various theories as to how this may occur. The usual reasoning is that man may eat some vegetables or drink water contaminated with the segments or ova and thus become the intermediate host (or pig), with the same cycle of development of the parasite. It can occur, however, that man is both the host and intermediate at the same period; that is to say, that a man infected with the *Taenia solium* may also be infected with the *Cysticercus cellulosae*. It is thought that this accident may be caused through the regurgitation of the ripe proglottides into the stomach in an act of vomiting, but it is more likely that the irritation of the proglottides passing from the anus, which they may do spontaneously and under their own motility, leads to the soiling of man's fingers and the transference of the ova to the mouth.

A man, aged 44 years, a hairdresser, was sent to me for consultation by his doctor in April, 1926. He complained of pains in the left knee joint of some five years' duration which he described as "rheumatic." A sinus had developed upon the medial surface of the knee some two months before I saw him; it was about a centimetre in diameter and of about the same depth, and there was a purulent discharge from it. For the last ten years the patient had suffered from "fits" of epileptiform type at approximately monthly intervals. He would lose consciousness and fall down in the street. He did not recollect having bitten his tongue during one of the seizures. It was on account of these fits that he was discharged from the army, the condition being thought to be due to neurasthenia following shell-shock. He was in India from 1908 until 1911 in the army, from which he was discharged in 1916 after active service in France. There was no history of infection by intestinal parasites.

The man appeared to be healthy. There was a discharging sinus upon the medial aspect of the left knee. The chest appeared to be normal; special attention was paid to the rhythm of the heart as cases have been reported where it was irregular when the heart muscle contained the *Cysticercus cellulosae*. No abnormality was found in the eyes, and no subcutaneous nodules could be felt.

Radiograms were taken of the left knee-joint and the condition shown in Fig. 1 was discovered. Scattered throughout the muscles around the knee-joint were some eighty opaque, ovoid, disc-like bodies, which were doubtlessly in the nature of calcifications. They measured about 1 cm. by 5 cm., with regular edges. The centre of each mass was less dense than the peripheral margins, where the shading was "ringed" and concentric.

It was decided to examine every other part of the body, and this was done. Radiograms selected from this examination are reproduced in Figs. 2 to 4; some of the others yielded negative results. It will be seen that a similar condition to the one found in the knee exists in nearly every part, but with the main grouping of the calcifications in the extremities, as far down as the ankles and the wrists. The pectoral group of muscles upon each side contained a large number, and they were also found in the muscles of the neck and in the deep muscles around the vertebral column. The lungs were apparently unaffected and no abnormality could be detected in the heart shadow. None was located in the liver substance. Three, at least, of the bodies were seen to be lying in the pia mater of the brain, one of which was localized in the middle of the motor area upon the left side. These cerebral calcifications were similar to those seen in the other parts, and were not irregular, branched, or of undue size, as they have been described as seen in some autopsies. A calcification was localized as lying at the bottom of the sinus in the left knee-joint, which was thus explained.

It was determined to remove one of the bodies for pathological investigation, and a superficial one in the right forearm was localized and taken out under a local anaesthetic. It was creamy white, uniformly regular in consistency, and of stony hardness. Sections were prepared after decalcification, and the photomicrographs which were taken of them are reproduced in Figs. 5 and 6.

Under a low objective the majority of the section was seen to consist of degenerated keratinous material, surrounded by a fibrous capsule in intimate association with the muscle substance in which it was embedded. In the portion of the section which is reproduced an area of specialized tissue was seen, which, under a higher power of magnification, was found to consist of what is doubtlessly a cestode head with its four suckers and its hooklets, representing in every respect the degenerated scolex of the *Taenia solium*. This is well shown in Fig. 6.

It was thus established that the sinus formation in the left knee-joint and the "fits" from which the patient had suffered for so many years were caused by infection by the *Cysticercus cellulosae* stage of the *Taenia solium*, of which he was the intermediate host. It is to be supposed that he became infected whilst in India, and that as the calcification process was completed in the embryonic deposits the manifestations of them began to appear.

The sinus has commenced to heal under appropriate surgical treatment, and between his seizures the patient is not otherwise inconvenienced by the widespread nature of his lesion.

I should like to acknowledge my indebtedness to Sir Bernard Spilsbury for his kind assistance and advice, and my thanks are also due to Miss Vaughan of the Dunn Laboratories of the Surgical Unit of St. Bartholomew's Hospital for the photo-micrography of the sections.

A CASE OF EXTENSIVE SOMATIC DISSEMINATION OF CYSTICERCUS CELLULOSAE IN MAN.

BY

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M.R.C.P.LOND, R.A.M.C.

As the opportunity seldom arises for observing in a living patient such large numbers and such a wide distribution of *Cysticercus cellulosae* throughout the body tissues, this case is, I think, worthy of record.

Pte. L., aged 24 years, had been a tramway worker in Lancashire before enlistment in April, 1920. After enlistment he had been able to carry out his full duties until October, 1925, when he was admitted to hospital for abdominal pain, vomiting, and fever, and it was then noted that his liver was enlarged to the extent of three fingerbreadths below the right costal margin. In November he had a similar attack, from which he recovered and was able to return to duty. So far as he was aware he had never passed any segments of tapeworm. On November 24th, twelve days after discharge from hospital, he had pain in the calf muscles which he noticed to be swollen. He could not walk far because of pain in the legs and shortness of breath. He reported sick again on November 28th, when it was noted that the muscular enlargement was not confined to the calf muscles, but that the muscles on contraction appeared nodular; certain nodules beneath the skin of the forehead and in the gastrocnemii were noted also. There was no oedema and the urine was normal. There was eosinophilia up to 4 per cent. On December 24th he had a "fit" during which the pulse was irregular and the rate rose to 120. When he came under my care on December 28th, 1925, he was pale and the face appeared puffy, but the two outstanding features were the chain of nodules visible on the forehead and the greatly enlarged, apparently well developed and powerful muscles.

The patient says he noticed the nodules first late in October or early in November. They are found in the subcutaneous tissues of the forehead, scalp, beneath the left eye, in the neck, and in the tissues of the cheek. They occur singly or in groups of two or three of varying sizes. When single they are ovoid, flattened ovoid, or spherical according to the amount of pressure exerted by the surrounding tissues. In size they range downwards from half an inch in the longest diameter. They are found in the aponeuroses of the abdomen, elbow-joints, thighs, and legs. In the muscles they can be felt singly, in groups, and in chains. One cyst is present in the left eye. They have not increased in size during observation. They may be described as fibro-cystic and are not and never have been painful. They are movable and not at all adherent to the skin.

Nearly all muscles are enlarged, especially those of the shoulder girdles, and on contraction the affected muscles present a nodular appearance. He gives the impression of being a powerful man of "Sandow" type development, but the muscle power is in fact very feeble. Enlargement is due to the presence of cysticerci and to the concomitant myositis. The muscles are tender. Vision at first was somewhat impaired in the left eye, but during the period of observation it deteriorated considerably. The heart does not appear to be enlarged, but the heart sounds are distant and not quite clear, and it seems probable that the heart also is invaded. In the central nervous system no localized lesion can be elicited, but during observation he has had five fits. They occur at any time, and on one occasion when he was asleep. They are accompanied by muscular twitching and jerkings, sometimes by cyanosis, sometimes pallor, and the pulse becomes irregular and the rate rises to 120. On one occasion the temperature rose to 99.2° F. He remains unconscious for four to five minutes, and this is followed by drowsiness and headache in the frontal region, especially over the left eye. He has no loss of sphincter control. His mental condition is not bright or quickly responsive, but his memory is good. The white cell count shows slight leucopenia, with a relative eosinophilia ranging from 12 to 6.5 per cent.

Vomiting occurred three times during the period of observation; it was not related to food; it occurred after a fit on one occasion, and at other times quite independently. No segments were seen in the vomit. The stools have been carefully searched daily for segments and ova, but without success up to date, even after the administration of anthelmintics. The urine at first contained traces of sugar, but since then has shown no abnormal constituents. The skin has never exhibited any evidence of urticaria.

On January 5th, to confirm my tentative diagnosis of generalized cysticercosis, two cysts were removed—one from the subcutaneous and one from muscle tissue. At the time of removal under local anaesthesia it was observed that the muscle (deltoid) was extensively invaded.

The following report on the removed cysts was received: "After removal of the ectocyst, they are found to be small oval cysts

FIG. 1.—Left knee.

FIG. 2.—Right knee—internal lateral.

FIG. 3.—Right ankle—lateral.

FIG. 4.—Left forearm—posterior.

FIG. 5.—Section under low power. (× 40.)

FIG. 6.—Section under high power. (× 370.)

discussion of monotony it is important to remember that we are dealing with subjective factors, and that so long as the control which we can establish over them is liable to the complications—environment, individual differences, and momentary attitudes—which affect all human beings, our deductions are effective only in a general sense.

With this limitation it is possible to make broad distinctions, since to most of us fatigue and monotony do in fact connote more or less clear sets of ideas.

It seems possible to illustrate by a rather homely example the way in which monotony, or its synonym boredom—is separated from fatigue. At the end of a university boat race the two crews finish in a condition of fatigue which would horrify a factory inspector or an industrial psychologist. They recover rapidly, but as they pass the post the limits of exhaustion have been very nearly reached. During the race they have performed seven hundred repetitions of a movement that they have made probably thousands of times before. Yet no one would imagine that these men have been conscious of the monotony of their labour. They have had to preserve a determination to drive themselves up to the threshold of complete exhaustion; they have had to remain keenly aware of many factors, such as alteration in the rate of striking or of the development of roll in the boat, to which no training can make reaction automatic. They are tired out, but they have not been bored.

These same men in practice for the race, however, have certainly suffered from the monotony of training. Besides physiological staleness there are periods in training where long spells of practice are accompanied by intolerable boredom, even when, owing to long use, hardly any fatigue accompanies the exercise, and the men land quite fresh in the physical sense.

We have variations over this whole range in industry. There are exhausting jobs—physically as well as mentally—which are not found to have that peculiar colour of monotony, while there are others so light that in the hours worked there can be no generally fatiguing effect, and yet the workers are keenly affected by monotony; if they persevere, they develop in time the symptoms of ordinary mental fatigue.

From the theoretical point of view the problem of monotony was first studied by Munsterberg in America. He defined monotony as a "subjective dislike of uniformity," and he put forward evidence that in repetition work the workers tended to defend themselves against this feeling by paying attention to minute differences between each repetition of the working cycle. By various laboratory tests, in which successive series of similar and different stimuli were applied to many subjects, he claimed to have distinguished between people in whom each experience in a uniform series facilitates a reaction to the succeeding ones, and those in whom the uniformity of the successive experiences has an inhibitory effect on the response. The former respond with less effort to each stimulus, the latter with an increasing effort as the series proceeds. He found evidence, by a general inquiry into the behaviour of all his subjects towards monotonous work, that those in whom this inhibitory effect was most marked were the ones who most disliked uniformity of work.

Although this theory was tentative, subsequent work has shown it to have elements of truth, and probably the best working conception of the mechanism behind feelings of monotony is the one which we owe to Professor Myers, who looks on monotony as a danger signal of central nervous exhaustion. In the structure of the body there are certain material limits—reserves of fuel, balances of acid and base, resistance of synapse and end-plate—which set a term to activity. These limits are always guarded by earlier nervous inhibition, which training, or the stress of some overwhelming necessity, can push nearer to the point of physiological exhaustion.

When a muscle is contracted voluntarily, impulses are sent up afferent fibres to the nerve centres, which tend to block further impulses to contraction. This is in the nature of a protective device, and in the typical ergograph tracing the growing effect of these impulses is seen in the successively smaller contractions, which dwindle finally to nothing. The muscle itself is not essentially less capable of work, and the neuro-muscular apparatus is still efficient, for if the load is lightened effective contractions can again be obtained voluntarily. The blocking is therefore more central in origin, and the appearance of fatigue is directed only to one special set of conditions. Alter the conditions, and the inhibition disappears. The blocking is a safeguard, acting far in advance of the real limits of capacity for work.

By an analogy, which at all events is justified by introspective evidence, we may see in this dislike of uniformity a similar protection. There is competition continually going on for our attention; mental processes begin and cease—mostly involuntarily, though all of us develop powers of selection. While one process is occupying our attention others tend to be inhibited. The balance, however, is always shifting, and sooner or later one process gives way to another. When monotonous mental work is being done the competition of other processes is most severe. There comes a time when they break through into consciousness, and, by their own tendency to inhibit rival processes, make the continuance of the first process impossible. If it is necessary for any reason to keep these distractions out of the mind, feelings of monotony arise.

If we now examine a little more closely the behaviour of our boat crew under different circumstances it will be obvious that their boredom under training conditions did not depend ultimately either on uniformity of work or on its continuous repetition. The real difference between practice and racing was one of interest. Under the hectic stimulus of the race the crew has an aim, and everything is willingly subordinated to the object of reaching the post first. Fatigue, the anguish of driving on an exhausted body, matter nothing. During training, however, this object is remote. The daily routine creates an illusion of permanence; the race day is too far ahead for preparation to be stimulated by its prospect. There is a sameness about the long practice paddles, about the advice of the coach, which the crew finds infinitely depressing. There are times when nothing but a complete holiday will restore their poise. Uniformity and continuity of work, without the close incentive of competition, have temporarily destroyed interest, and the work is found more and more monotonous.

Now these features are increasingly obvious in the industrial situation, for there will be no going back from the development of invention and organization which has in the last century revolutionized production on the large scale. By dividing the operations of the work, by specializing the functions of the worker, production becomes more rapid and goods cheaper. At every point in the industrial process small jobs are being split off, to be performed by a new machine, or by a hand which, because it now does one operation instead of two, develops a skill which changing work would not permit. In the shoe industry the original work done by the village shoemaker is now divided between scores of operatives, using special knowledge and the skill of years on one fraction of an operation. The original working cycle is split up into many small work cycles, repeated with a minimum of variation hundreds, perhaps thousands, of times in the day. In some trades variety is demanded of the manufacturer, in others efforts are made further to standardize both operation and product, because the manufacturer believes that variation in either causes waste of skill and loss of productive power. With this tendency to division and to specialization the possibilities of interest and expression in work decline.

Repetition is, of course, not a new problem. Even the bootmaker made one boot after another; domestic work is often a rather uninspiring routine, and in hoeing a twenty-acre field a large number of very similar movements are made. But, through the logical extension of a process that began as soon as men ceased to provide all things for themselves, many more people are busy nowadays with repetition work, and the average length of the working cycle becomes progressively shorter. Two hundred years ago there was nobody living who was faced with the necessity of performing a two-second operation all day long for years on end. There are many in that position to-day, and to that extent we have a new situation.

showing at one point a darker area about the size of a pin's head. They contain a clear fluid and the dark spot proved to be the invaginated single scolex of the intermediate form of *Taenia solium*."

On January 6th the eyes were examined and the following report made: "The pupil reactions and all movements are normal. The left optic disc (D) is woolly at the edges, the blood vessels more engorged than usual. About a disc's diameter from the temporal side in a horizontal direction there is a small area of retinal depigmentation (P), a patch of choroiditis (C), fibrous bands with shallow opaque detachment of the retina leading downwards to a large subretinal cyst over which the vessels are stretched. The cyst shows a clear and well defined edge, is bluish in the outer portion, while the central area is hazy and opaque in which three or four dots can be seen. The cyst extends into the vitreous up to 5 D. The appearance presented is one of chorio-retinitis with a subretinal cyst due to the presence of a cysticercus."

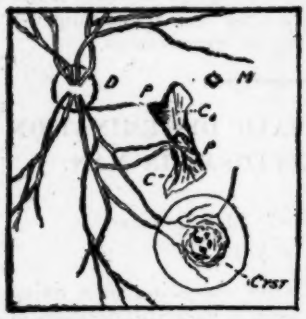

Diagram of left fundus. D=Optic disc. P=Retinal depigmentation. C=Choroiditis and fibrous bands. Cyst=Cysticercus cellulosae. M=Macula.

As there is no evidence of the patient harbouring a *Taenia solium* now, and no history of his ever having acted as host to such, it is presumed that he must have ingested extraneous segments or ova. And as the digestion and dissemination of such is usually accompanied by constitutional disturbance, it is further presumed that the attacks of abdominal pain, vomiting, and fever were resultant to such dissemination, soon to be followed by painful muscles. In substantiation of this presumption is the fact that no nodules made their appearance prior to this illness in October. Up to the time of invaliding from the service he has received treatment by calcium salts and potassium iodide, and later by intravenous injections of novarsenobillon.

I am greatly indebted to Major Hood, R.A.M.C., for the pathological reports, to Captain Bell, R.A.M.C., for removing the cysts, and to Captain Kumar, I.M.S., for the ophthalmic examination.

British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

SECTION OF MEDICAL SOCIOLOGY.

C. J. BOND, *C.M.G.*, F.R.C.S., President.

PRESIDENT'S OPENING REMARKS.

THE PRESIDENT said he regarded it as a great privilege to preside over the Section of Medical Sociology for two reasons: first, because the subject of discussion—namely, "The effect of fatigue and monotony in industry," was a factor of increasing importance in the health and welfare of the industrial population; and secondly, because it was very desirable to enlist the interest of the medical profession (including medical officers of health and general practitioners) in the recent advances made in this field of industrial physiology and psychology.

This Section provided an excellent opportunity for bringing before the notice of their medical colleagues, as well as the public generally, the important work which was being carried on in industrial life by the Industrial Fatigue Research Board, the National Institute of Industrial Psychology, and by other societies and welfare workers interested in industrial hygiene.

A sound system of industrial psychology and physiology must be built on two principles: first, that every normal human being should strive to obtain some sense of satisfaction from energy expended and work done; failing such requirement, effort became reduced in volume or was diverted into other channels. The actual doing of the work itself must provide a fuller sense of satisfaction. If industrial toil were less exhausting to mind and body, more stimulating, more health-giving, more interesting, then the growing demand for higher wages and shorter hours would be less insistent and greater benefit would be conferred on the worker. Consequently, a discussion of the factors in industrial life which tended to promote or to diminish the attainment of this sense of satisfaction must be of great importance. Among these factors the questions of monotony and fatigue had a very important aspect. The second principle was that the industrial problem was essentially an evolutionary one. It was largely a problem of adaptation to the industrial environment. If the worker was not fitted by nature, or had not been fitted by training, for his particular occupation, then he had not become adapted to his industrial environment. This opened up the important problem of vocational selection and vocational guidance in industry. In fact, it was not too much to say that the fitting of the work to the worker and the worker to his work was one of fundamental and growing importance, not only to the future of industry in our own country, but to the future of industry in the world.

DISCUSSION ON THE PHYSICAL AND MENTAL EFFECTS OF MONOTONY IN MODERN INDUSTRY.

OPENING PAPER

BY

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MONOTONY and fatigue are two aspects of a problem that affects the happiness and health of hundreds of thousands of workers in our civilization. It is not so easy, as mere separation on a notice of meeting would imply, to mark off two clearly defined fields of inquiry, and I think it is safe to say that in talking about monotony we shall find ourselves dealing simultaneously with some of the questions which will come up for discussion this afternoon. For although in our minds we can separate the more or less crude conceptions of fatigue and monotony, yet, when dealing with facts, and with situations in industry, it is often impossible to define clearly the responsibility due to either of these two factors, and frequently the remedies which we propose for one are directed to the relief of both. In work on these subjects we are to some extent handicapped by the long bridge from the laboratory to the factory. In other sciences data which at first lack sharpness respond to the refined treatments of the laboratory, but in dealing with human beings so many of the essential factors vary, when conclusions are sought in the midst of work, that in proportion to the extent by which we are forced to depart from objective controlled measurement, the possibilities of forming a clear opinion dwindle away.

The overlapping of work on fatigue and on monotony is explained by the fact that all evidence leads us to treat monotony as in some ways a special case of fatigue. To a limited extent we are justified in treating fatigue objectively. It has results which under suitable conditions can be expressed quantitatively. When work of any kind is done feelings of weariness, of disinclination for further work, and of desire for rest become prominent after a time. Muscular work causes diminished capacity for further activity, a decreasing rate of output (when the first slight stimulating effect of fatigue is past), an accumulation of waste products in the tissues, and finally increasing nervous inco-ordination. These effects can often be translated into terms of quantity. Physiological changes are not so obvious after mental work, but the general effects on rates of output and on accuracy of work are comparable with those following muscular activity.

Monotony is more elusive. It has no immediate physiological results distinguishable at present from those of fatigue—indeed, if we look on monotony as a special kind of fatigue this is not to be expected. It is not universal in its incidence under any given set of conditions, and it is not necessarily relieved by any particular remedy. In all

far as purposeless fantasy seemed undesirable. The girls felt an inertia, which seemed to be due, not so much to uniformity of work, as to the possibility of reshaping the world, which can be realized in fantasy. When the mind habitually turns away from externals the workers find relief in the easy play of ideas which goes on concurrently with work. It is not surprising if years spent in this way slowly destroy among the workers the wish to effect changes in themselves or in their environment. There is an easier path to a kind of half release which prevents efforts to a more positive satisfaction. Among these counters, who had all had secondary education, there were some who realized this vaguely, and added a slight feeling of guilt to the combination.

But there are more sinister effects of excessive reverie. Unless monotony is relieved it may be pushed, in limiting cases, to a point where there is a failure of inhibition, which allows the release of repressed unpleasant memories from the unconscious. This is liable to happen when central control is weakened by fatigue, and the peculiar circumstances of unlimited time for reverie and for unsystematized association, which monotonous work provides, set the stage for the development of neurosis. Even among normal people on monotonous work there are signs of maladjustment. Unreasoning fears are displayed of quite safe pieces of machinery, used thousands of times without accident; anxieties are more than usually obvious about output, about the opinions of fellow workers, about health; others admit to a feeling of being trapped, or "as if the day were leaving them behind"; while some girls on the counting process had a feeling that they were being watched, which was not justified by facts, even though some of their work was checked. The feelings of "guilt" also are in this class.

All of these tendencies may be the beginnings of psychopathic lesions. They do not occur in all people; they are always put forward apologetically as something rather stupid and not worth mentioning by those who experience them. In most cases, even after a long time at the work, the acquirement of interests outside the work and a generally healthy attitude to life offsets their beginnings. But in a few cases the symptoms develop to the point where psycho-therapeutic treatment becomes necessary.

Even when the stage of genuine psycho-neurotic breakdown has not been reached the presence of people with such tendencies has a noticeable effect on the atmosphere of the workshop. The internal dissatisfaction of a worker whose powers are not being used is sometimes not consciously seen at its true value, but spreads itself in resentment and criticism of the whole system. Such people grow irritable, the ordinary social amenities disappear, the perspective of affairs vanishes, and sometimes a tendency to aimless mischief arises. Thus there was a case where, out of detestation of monotonous work in a very poor environment, a crew of men handling fragile sheet material at a conveyor extracted an undoubted pleasure and relief from periodic destruction of some of the material. When conditions were improved the spoilage was reduced to insignificance. The protest of such workers is not always foolish, because it comes by way of reaction to the monotony of the work, and the mere fact of investigating their complaints adds something of interest to their work.

The only way in which physical effects can be attributed satisfactorily to monotonous work is by the comparison of groups of workers. This has so far not been done, though I believe an investigation on these lines is proceeding. The physical effects will not be connected with monotony, prima facie, for in those cases where monotony is felt to be most oppressive, the lesion that occurs will be functional and in the nature of a defence against continuance in the work. We have only to remember the case of miner's nystagmus to see that this is a possibility. It was found that the eye twitch which characterized this disease was functional in origin, and to some degree its occurrence was a method of unconscious self defence against the discomforts and dangers of the pit.

One of the obvious ways of preventing the development of boredom is to stop work. It was pointed out earlier that by increasing the continuity of work there was not necessarily a gain in output, and one of the tendencies noticed in workers under these conditions is the taking of unofficial rests. Here again the counters before mentioned provide us with an example. Time study showed that, although counting was found dull and monotonous, it actually occupied less than two hours out of the six-hour day which was worked. There was a traditional, but unofficial, allowance of ten minutes away from work twice a day, whenever it was most required. But analysis revealed the fact that even with the slowest workers at least forty minutes of the day went in odd seconds and minutes of complete rest from work. With the fast workers even longer time was taken. Out of the total about two-thirds was taken in the afternoon spell. The feelings of monotony are most oppressive in the afternoon, and, as is usual when work consists of short repeated cycles, it was found that, although the actual speed of counting did not greatly fall off, increasing amounts of rest were being taken between repetitions towards the end of the day.

It has been thought also that the work curve can, in certain circumstances, provide evidence of monotony. This curve shows the rate of working at various times in the day, and in its usual form shows a rise from the start to a maximum at about the third hour of work, followed by a decline to the dinner hour. The afternoon curve rises rapidly at first, and then declines more or less sharply as the afternoon wears on.

Laboratory curves of work found to be monotonous by the subjects very often show a depression in the middle of the spell. The workers dash at the work at a pace which cannot last. Boredom causes a decline in speed, until, overestimating the time that they have been at work, a spurt begins because they anticipate the end of the spell. They finish strongly.

Wyatt has shown in continuous addition and comptometer work that this tendency to slow down in the middle of a spell is most clear in those people who find the monotony of the work most distasteful. It was found by Miss Burnett, in an experiment under conditions very close to those obtaining in industry, in which work was done with and without rest pauses, that the depressed curve was given preponderatingly by the more intelligent subjects—who were also the most bored—and especially on those days when, through the absence of rest pauses, the tendency to monotony would seem to be most marked.

From our inquiry it will be seen that any method of reducing the uniformity of work will be a step in the right direction, so long as the necessity of keeping a balance between too much change, with its irritating effect on piece workers and its depressing effect on output, and too little, with the danger of monotony, is realized. Any method which we can use to increase the interest or the incentive to work will be effective. Boredom is not felt, or at least has no chance of developing into serious nervous exhaustion, if the worker feels that, though the work is dull, it is worth doing. What makes it worth doing may be anything—from a high wage to a young man in the same factory. It may be pride in the organization, pride in one's own skill, or personal liking for the company the workshop affords. With a good factory atmosphere the plea of monotony is not put forward on work where other conditions would at once produce feelings of resentment and boredom.

In order to increase interest in work, short talks on the relation of each worker and his process to the general scheme have been suggested. Wherever it is possible some method of giving the worker an interest in output is desirable, and the change of outlook is often most marked when this is done. Miss Burnett's experiments were designed to illuminate this point among others. Her four subjects worked for two periods of three months, first on time rates and later on piece rates. The work was identical in both the periods. During the piece-rate period the girls worked harder, found much greater interest in the work, showed an almost complete absence of the monotony curve, and achieved increases of output which ranged from 9.3 to 17.9 per cent.

The value of rest pauses and of changes of work is also marked. The effect of breaking up the working period is to allow the prospect of stopping work to be an

It is not only that repetition destroys the possibility of interest, though any experience has only to be repeated often enough for further repetition to become irksome. Only while there are possibilities of new discriminations, of new reactions in ourselves, is it possible to attend with pleasure to the repetition. When once our favourite poem is sufficiently familiar to be quoted without shock in the morning newspaper leader something of its attraction has gone for us.

But the tendency of modern industry to deal with material as so many identical samples also removes the elements of interest from work. When the bootmaker finished his boot there was character and history in the making. Problems had been faced, particular difficulties overcome, which remained associated with the product. There was the possibility of an almost personal relation to the product. Because the modern worker deals only with one process, the range of difficulty is limited; in a short time there are no surprises, and his own contribution to a piece of work is overlaid at a later stage by the labours of other hands. All that is left is the necessity of passing a standard and of achieving output. Although derived interests do arise in connexion with work there is no longer the individual and personal response which was once possible. Work is becoming a price that is paid for leisure.

With increasing uniformity of material there is a steady pressure towards increasing continuity of work. The pictures which those unacquainted with industrial life draw of repetitive processes usually fail to allow for the fact that work is rarely continuous. Dr. Vernon of the Industrial Fatigue Research Board made an inquiry into the conditions of fifty apparently continuous jobs spread over boot and shoe making, tin canister making, laundry work, and packing operations. The working cycle varied from under one second up to as much as two minutes, with an average length of under four seconds. By making time studies of the work of various operatives, the number and duration of the breaks was analysed. Dr. Vernon examined only those jobs which seemed noticeably regular. Stops occurred for many reasons. Work had to be carried away or fetched; machines had to be stopped for cleaning or adjustment; there were waits when new supplies were not forthcoming. In the most continuous work—handkerchief-folding—there was an average of three breaks in the hour, totalling four and a half minutes. In other jobs there were breaks of as much as eleven minutes in the hour. Over the whole group workers who habitually sat at work got four breaks in the hour, which they spent walking or sitting, while standing workers got five breaks. There is, however, a tendency for these stoppages to be eliminated, although by affording opportunities for change of posture, for walking, and for conversation, they offer a welcome relief from the rhythmical inevitability of the work. Such unproductive time is from one point of view waste, if a skilled producing agent is performing small transport services, but it would be well to weigh against machine-like efficiency the human cost of increasing the continuity of work and the likely oppressiveness of its monotony in these circumstances. Output does not entirely depend on productive time.

Although on very uniform and very continuous repetitive work a higher proportion of workers will suffer from monotony than on more varied and interrupted work, there are still people who are not bored by work of this kind, and people who, even on the most varied work, maintain a steadily depressed attitude to life, and complain bitterly of monotony. It is safe to generalize and say that the actual temporal or material conditions of work do not make it monotonous. Monotony is a reaction, not to particular selected features of work, but to the whole circumstances of its performance. Its appearance is conditioned, not only by the industrial environment, but by personal relations of all kinds and by the circumstances of life in general for the worker who feels "fed up."

The theory of monotony as a warning symptom of central nervous exhaustion, consequent on the effort to maintain some mental process in the face of strong competing interests, is capable of being brought into close connexion with the operative in a factory. All industrial work involves the maintenance of certain attitudes of mind—to the work itself, or to the people engaged in the work. The worker feeding a dial machine, or counting screws, is able to perform these operations with a minimum of attention after a time. It is not generally possible to concentrate on anything else, however, without detriment to the work, or even sometimes danger, and there are consequently voluntary restrictions on freedom of movement, necessities of behaviour, and inhibitions of normal impulses (such as looking up at a sudden noise), which have to be preserved. There is a perpetual holding of oneself in check. If there are no incentives powerful enough to strengthen the workers in these efforts, then sooner or later the special kind of fatigue which lies behind monotony will set in.

It is often extremely difficult to decide to what extent the monotony of work is oppressive. Suggestion always operates among groups of workers engaged on similar processes—a new-comer will suddenly open the eyes of a group to defects or conditions which had not affected them before. A worker genuinely affected by the dullness of a job sometimes destroys by her complaints the attitude of acceptance which others have managed to achieve. Recently, in a factory where the work involved was the counting of certain forms, and the sorting from them of a very few defective specimens, and where there was a periodic shifting of the workers from branch to branch, there was among new-comers a strong antipathy to the work, for lurid stories of the conditions in the counting office were circulated in the other offices of the firm. The new-comers were usually pleasantly surprised, for the compensations had not achieved the same publicity as the drawbacks. But among the old hands there was a good deal of complaint of the monotony of the work, in spite of short hours of work and very high pay. It was difficult to decide whether this tendency to complain of monotony arose because long continuance at the work reduced all to a state of boredom, or whether, as there seemed some reason to believe, suggestion from the few who really found the work intolerable—and however good the conditions there are always some who hate such work—produced a general reaction against the work. There was a fixed quota of output, not unduly high, and many opportunities for breaks in the work, so that the conditions were not oppressive. There are likely to be many cases in industry where the oppressiveness of monotonous work will only be felt when suggestion has undermined resistance.

The mental effects of monotonous work vary from person to person. In nearly all repetition jobs in which monotony is felt opportunities are afforded for reverie. Probably there is no opportunity for thinking of a systematic kind, owing to the slight attention which must still be paid periodically or continuously to the work; but a vague, loose series of associations floats through the field of consciousness. To some workers there is an attraction in work which does not require close concentration. Others fall into an attitude of passive acceptance. The day slips by, and output piles up, while fragmentary pieces of experience are caught up, turned over for a few moments, and allowed to drift away again. There are workers to whom it had never occurred that objectively dull work was boring. If there are no standards of criticism towards aimless mental activity of this kind the worker is contented.

But increasing intelligence, and especially increasing education, have their effects. Among the girls on the counting process there were many to whom the limited scope of the work added to its burden. "Any fool could do this," they said, and they also in their work found opportunities of reverie. But their dreams were not altogether happy. Because at bottom tendencies were failing to find expression in the work, reverie became a means of escape, which is never adequate so long as the worker is conscious of the discrepancy between fancy and reality. These girls realized that their full powers were not being used. By way of reaction many of them said that though they once read books they had ceased to do so now. They seemed resentful that this should be so, and projected the responsibility on to the work. They felt, as one of them said, as if they were becoming "turnips," that they were not so intelligent as they used to be.

Reverie appeared by no means unpleasant, except in so

could day-dream quite happily and carry on their monotonous work efficiently. The content of the day-dream could rarely be elicited, but it was usually of a compensatory type; it allowed of the expression of activities and emotions not normally expressed in reality. Others found that the day-dream interfered with their work; they tended to oscillate between the work, which did not occupy them fully, and the day-dream. Others, again, looked upon the day-dream as something to be opposed, and resisted it, wasting in the process valuable energy; they tended to have psycho-neurotic symptoms of a serious nature. Occasionally the day-dream, instead of being pleasant and controllable, became the master, and the subject became more and more self-centred and a victim of fantasy. In these cases the work was looked upon as a refuge from the unpleasant character of the day-dream.

Major T. KNOWLES (Supervisor of Messrs. Boots' Welfare Centre) said that the monotony of modern industrial processes was a subject of constant discussion, and visitors to some firms would remark of the work, "How monotonous! I couldn't do it; it would kill me." But what was monotony? Monotony was surely a question of individual preference, and it was impossible to generalize and say that such and such a thing was monotonous. If everyone found the same things monotonous, how monotonous everyone would be. Was it possible to find interest in stamping boxes every day? His inquiries tended to show that the girls found much of interest in the work. No work was unskilled, and there was a definite pride in the way the work was done and in the speed of the work. Where girls were working in teams there was the desire to play a part in the group results, and where these results were posted the pride in individual skill and in the collective skill of the group was accentuated. In addition to the interest which the work itself created, there was the interest created by companionship and surroundings. It was said that there was deadening effect on the mental faculties of these workers, and a lack of opportunity for self-development. But leisure was the time for self-development, and Major Knowles would support any movement which removed the monotony from leisure and offered to the workers opportunities for development. He would claim that work need not necessarily provide the development, but it must provide the means for that development; and it was only by what had been called monotonous repetitive methods that this could be secured. Girls who had been for some years on repetitive work took their part in the mental recreations that were offered, and the non-vocational culture classes were made up largely of girls of this type. Finding it unnecessary to absorb their evenings at classes in shorthand, book-keeping, or that vague subject commercial practice, they were free to attend the housewifery, cookery, needlework, and leatherwork classes. To show the absence of detrimental results in repetitive work Major Knowles quoted the experience of an office department. In this particular office department there was a staff of two hundred girls, one-third of whom were engaged in adding machine work, the other two-thirds were employed in ordinary office work. The percentage of sickness amongst those engaged in repetitive work was about one-half of that for the rest. The girls on repetitive work were happy and healthy; they resented any effort to change their work; they were playing their part in the social, educational, and recreational work, and to arouse artificial discontent by constantly suggesting that the work was injurious was a futile thing to do.

The wise employer realized that his responsibility did not cease with the weekly pay envelope. Repetitive methods or any other methods would be harmful if the working conditions were not good. The employer should take every precaution, in time and motion study, ventilation, rest pauses, and the provision of suitable apparatus to ensure safe and easy working; and welfare work in its medical, educational, and recreational aspects must co-operate.

The problem of monotony, said Major Knowles, was one of the many problems of industrial management, but they should be somewhat slow in their judgement on these problems. There was a new spirit in industry which would in time remove the suspicion and consequent opposition that existed to-day. It was not by rules and regulations that they would succeed; statutory methods must fail. They must secure the atmosphere, and, above all, be moderate in their statements.

Miss SLOCOCK (Superintending Inspector of Factories) said that in endeavouring to get examples of what were generally considered the most monotonous occupations, or rather processes, she was at once confronted with the fact that in one sense there was no such thing as monotonous work. It was rather the reaction of certain human beings to certain work carried on under certain conditions, not necessarily repetitive work or work carried on for long spells. The question of character and temperament played such a large part that what appeared monotonous to one person might not prove in the least so to another. Inquiries showed that it was repetitive work of various kinds that was generally considered to be monotonous. It was probably the absence of *creative* aspect in any work that brought about the sensation of monotony. This aspect was well expressed by an old collar maker in the West of England who said: "Nowadays it is difficult to take any interest in one's work when one only does a small portion and never sees the finished article. In the old days when you made the whole collar you felt satisfied when you turned out a good one, but nowadays the collar when finished belongs to no one." It seemed impossible to get any very definite information as to the adverse effect of repetitive work on the mental and physical health of workers; but there were certain factors which had an important bearing on the subject. Thus it was customary to draft the new young worker on to the most monotonous job and to promote her as soon as opportunity offered to work requiring more intelligence. If the time spent on the monotonous work was not too long it was scarcely likely to affect the physical health, but if unduly prolonged it might affect the mental capacity of the worker and make her less adaptable to other work. Secondly, the shortened working day of eight to nine hours and the week of forty-seven or forty-eight hours had doubtless mitigated to a very large extent the fatigue which would result from longer hours of monotonous work. Under modern conditions and shorter hours the workers appeared to be brighter and more alert, even when performing monotonous jobs. Thirdly, automatic feeds were now eliminating much monotonous work. The tending of such a machine and keeping it supplied with material was a very much more interesting and less monotonous job than the continuous feeding of small parts or sheets into the machine. Fourthly, it was undoubtedly the environment in which the work was done rather than the work itself which affected the mental and physical condition of the workers. The mental atmosphere of the factory, if it was friendly and interesting, might soon compensate for lack of interest in the job. Constant nagging by an overanxious foreman or forewoman and bad hygienic conditions, on the other hand, might soon create such a feeling of strain and worry that the most interesting work became irksome and burdensome, and the workers lost heart and health. Lastly, while scientific investigation into vocational selection, methods of work, the elimination of wasteful movements, the adoption of labour-saving appliances, and rest pauses and hours of work had helped to show how monotony could be counteracted, there was real need for warning as regards overspeeding. Work carried on at too high pressure was probably far more fatiguing and likely to affect the health adversely than work at the worker's own pace spread over a slightly longer period. Alternation of employment was not generally popular, and even young workers on unskilled monotonous work appeared to have an affection for their own particular job.

Miss K. DOWDING, of the Chiswick Polish Company, said that the inevitability of mechanical industry was now undisputed, but that highly organized methods brought new problems for the psychologist and physiologist, one of which was this new form of monotony. She used the term "new form of monotony" advisedly, for it was only reasonable to suppose that monotony and its ill effects had been present in connexion with the work ever since the

incentive to continuing for the time being. Change of work, if that is possible, is more desirable than rest, for there comes a complete temporary breakaway from the attitude which has become wearisome. There may be opportunities for collecting together into a definite period various subsidiary operations, fetching and removing work, which would otherwise be done sporadically. Or it may be necessary to specialize the work of a group of people still further to get the required conditions. The National Institute of Industrial Psychology had a case where a group of girls were employed on a process which involved opening certain parcels, checking the contents, performing a punching operation on the contents, and remaking the parcels. The average time per parcel was thirteen minutes under ordinary conditions, but under supervision, not working at an exorbitant rate, two workers averaged eight minutes over a long period. Every one complained of monotony. There was much congestion and litter in the room, and between each parcel and the next a journey had to be made to the store shelves. By dividing up the work process, so that one team of girls did the preliminary opening of the parcels while the distribution and collection of work went to two inspecting and punching teams, not only was output increased by 10 per cent., even when rest pauses were inserted, but by having the three teams change functions at intervals there came a break to which all looked forward. Although each job involved more repetition than the old complete cycle, yet three repetition jobs done for an hour each proved permanently more interesting than the former longer and more varied process repeated less frequently. Here also we had an example of the environmental influence. As a result of the change in organization the room became tidier. There were fewer people, since with a 10 per cent. increase in output some could be moved to do other jobs. There was less moving about, and the possibility for the first time of developing rhythm or swing in the work. It became obvious that a part of the reaction against work in this room, which was so severe that only half-day shifts were operative, was due to the congested, irritating, and untidy conditions of work.

There is one more step which can be taken to reduce the incidence of monotony: there is still the possibility of selecting workers for the more dull and repetitive work by diagnostic tests. It has often been stated that intelligent people are more likely to suffer from monotony than the unintelligent, and it is quite true that, *a priori*, we should expect those who are most capable of dealing adequately with new and unexpected situations to suffer most in work which makes demands for no initiative. Miss Burnett found that of the four girls, the two most intelligent, as indicated by a simple "directions" test, found the work most monotonous and furnished the most objective evidence of monotony. But the stage has not yet come for the preparation of norms above which entry to a monotonous job will not be recommended. There must be time for the collection of more data, and valuable results may be forthcoming when the figures of labour turnover on repetitive jobs are analysed, with respect to intelligence, at the conclusion of the experiment on vocational guidance now being carried out by the National Institute of Industrial Psychology.

Specific tests of capacity to tolerate uniform work have been suggested. Except for Munsterberg's tests quoted earlier, which have not been much developed, most of these take the form of long uninteresting tasks in which the rate of output is measured continuously. There is some slight evidence that an erratic performance, with a widely varying rate of output from minute to minute, is an indication of the future liability of the subject to monotony. In addition to these special tests any method of selection which guides people into work for which innate dispositions and aptitudes fit them will, *pro tanto*, reduce the possibilities of disharmony, and so minimize the effects of monotony. Some of the worst sufferers are those who, through lack of dexterity or other disability, feel themselves on the verge of failure at their job, and, struggling against something which they do not realize as inevitable, grow disheartened and depressed.

I have tried in this paper to show how monotony depends on the interaction of many factors, of which perhaps the most important are personal ones. Since there is no doubt that many of the determining conditions are bound, under the present methods of production, to increase their influence over the general body of workers, it is important to recognize the results when we see them, and the ways in which monotony may be combated. If, finally, there is a gradation of interest, then suitable people must be steered into the most exacting work, for the general social welfare suffers while the wrong person fights against the uncongenial job. If the costs of improving monotonous work are economic, the losses through its continuance are not only in human values. One fears to preach to the converted, but it cannot be too strongly emphasized that mental attitudes are vital factors in production.

DISCUSSION.

Miss MAY SMITH (Industrial Fatigue Research Board) said that complaints and criticisms of monotony were usually made by highly educated people who went through a factory as observers, or in some instances as investigators. The besetting sin of the investigator was to put himself in the place of the worker, and then judge that work as it would affect him were he doing it. It was necessary to see the work as it really was to the worker. The word "monotony" meant one tone, and represented absence of stimulation; it was frequently attached to "repetition of movement." Repetitive movements must either be studied as such, in which case their problems belonged to the psychology of habit formation, or they must be put in their complete setting, which setting would include at least the repetition work, the varying amount done as the hours go on, the opinions of fellow workers and authorities about that work, physiological changes, emotional changes, and the collective life of the factory. Workers on one process frequently stigmatized as monotonous some other process, when to the observer there was nothing to choose between them. In itself, monotonous work could not be said to be detrimental to the health of the worker as such; as in so many other industrial problems, it was a question of relation—that is, of the effect of a given type of work on a given type of person. It was useless to criticize or attempt to assess a process regardless of the person who was to work at it. It was now comparatively easy to measure a person's general intelligence or neuro-muscular equipment; it was impossible to measure objectively the emotional make-up. A worker of average intelligence and skill engaged on routine work in an office or factory where the general atmosphere was dull, and where there was nobody in whom she took any interest or for whose approval she cared, might react in one of four ways: she might become a bad timekeeper, seize every opportunity for leaving the work, and become just as unsatisfactory as she could be without losing the job. She would probably be called "difficult," and be frequently in trouble. Secondly, in a person of similar intelligence and speed but of lower vitality boredom might quickly lead to sensations of tiredness, which in turn led to attention to some part of the body. That part which she was using might come into consciousness, and she would feel a pain and complain that her eyes ached, her head ached, that she had rheumatism, or that she suffered from indigestion which nobody could cure. It was rarely the happy and well placed people who had a sequence of sick leaves every year. The boredom acted as a negative agent, weakening resistance. Thirdly, the worker might carry on for years with gradually diminishing interest. Here the monotony was related to the general conditions of the work rather than to the actual repetition of movements. She would complain that the work got on her nerves; she would be irritable, and would probably have some form of "nervous breakdown." Breakdown was not infrequently equivalent to "fed up." Fourthly, the worker might get interested in the work, and might laugh if asked about its monotony; or she might accept it and compensate outside. Finally, there was the way out via the day-dream. This reaction was by no means universal, nor were its effects simple. Some people

In the meantime welfare work was to be encouraged, aiming as it did at neutralizing as far as possible the effects of monotony in work. While many workers employed in monotonous work did not find it irksome some undoubtedly did, and, either on account of intelligence, education, or of temperament, were broken in health and happiness by routine. These should be eliminated by vocational tests and given more varied work to do.

Sir THOMAS LEGGE (Home Office, Whitehall) thought that welfare work would gradually bring back some portion of the interest in work that existed in the mediaeval guilds. In the guilds there was comity between employer and employed; the sick were cared for, good work was important, and pride was taken in the work. Trade unions and employers should have the same aims nowadays. Competition, which was absent in the guilds, was producing monotony, though complaints of monotony had not been brought before him much by the workers themselves. There were, indeed, many more urgent conditions that required to be got rid of before monotony was tackled.

Dr. BRACKENBURY (London) said that Sir Thomas Legge was thinking more of the physical effects of monotony; they should think also of the mental effects. It was curious that nearly all the speakers had spoken on female mentality. Was there not also a mentality of men? He would like to see communal pride, as well as individual, in the products of labour—pride in the finished products in which the workers had taken part. There should also be artistic pride in the products, and the development of this would be helped by the nature of the surroundings, an artistic environment for the worker. And, most important of all, work must not be separated from the rest of life. A proper attitude towards life in general should be instilled into the minds of the worker.

Dr. H. S. BEADLES (Romford) said that he, like others, had started as an idealist; but with thirty years' inside experience of many of the large factories of most types of industry, he wished to warn his hearers against too much interference with the life of the worker, particularly outside the factory. Having been asked by the Home Office to help in the formation of statistical records, he did not feel in a position to do so; and he noted that statistics were quoted in percentages on the result of as few as three cases investigated. Welfare departments had been of great help to the worker inside the factory provided they had been in suitable hands, but some of the superintendents of these were following the workers into their own homes; the interference involved in this was seriously resented by many of the employees.

DISCUSSION ON THE PHYSICAL AND MENTAL EFFECTS OF FATIGUE IN MODERN INDUSTRY.

OPENING PAPERS.

I.—W. LIONEL HICHENS,

Chairman of Cammell, Laird and Co.

I HAVE no pretension to expert knowledge on the subject of industrial fatigue, and I cannot even claim that degree of practical knowledge which comes from daily contact with workshop practice. But I can claim to be keenly interested in the subject, since I have been a member of the Industrial Fatigue Research Board from its early days, and have followed its activities closely.

This has been called the age of science, and the importance of research and the application of science to industry is widely recognized. We realize the importance of an exhaustive research into the properties of coal or of iron and steel, but we are not perhaps so fully alive to the need of research as applied to the human factor in industry. And yet the human factor transcends all others in importance. It is not merely that we want industrial workers to be healthy; it is not merely that we want them to be wealthy—and in spite of all that is said to the contrary we do want that; we want them also to be wise and contented. And contentment must be based on the knowledge that their health and well-being are cared for.

"Industrial fatigue" is perhaps an unfortunate term, because it is both too wide and too narrow. It is too wide because it seems to imply that there are certain trades in this country which demand such strenuous physical exertion as to affect the bodily or mental health of the worker. Under the modern conditions of an eight hours day, and given good health and good training, I do not believe that this is the case. I do not deny, of course, that many forms of industrial work are physically exhausting if pursued too strenuously or for too long spells, but on the whole legislative safeguards are adequate, combined with the natural human instinct of self-preservation and the experience of ages, to cause all classes of workers to adjust their output so as to prevent physical or mental injury. During the early days of the late war a heavy demand was made on the workers in certain industries, and they responded magnificently. But it was found that after a time the workers were unable to maintain the pressure, and that a better output resulted from reduced hours of work. The instinct of self-preservation asserted itself before the health of the workers was seriously undermined. At the same time, it is obvious that some forms of work are more fatiguing than others, and they deserve study in order that the point at which fatigue begins may be postponed as far as possible, and in order that the well-being and efficiency of workers thus engaged may be improved. Again, it is undoubtedly true that fatigue—even where its direct consequences are not injurious—predisposes its subject to certain diseases. Hence I am convinced that the work carried out by the Industrial Fatigue Research Board is of great value, and deserves the widest public support.

I propose to indicate broadly some of the directions in which the study of the problem of industrial fatigue may be pursued with advantage. In the first place, it is obviously desirable to eliminate all unnecessary physical effort, and as far as possible to substitute machinery for hand labour. This is primarily, of course, a problem for the engineer, and it is difficult to overrate its importance. If the objective of industry is to be, as it should be, to pay high wages, this can only be done as the result of high productivity, and improved mechanical devices must necessarily play a principal part in the attainment of this end. But while, as I have said, the substitution of machinery for hand labour is primarily the work of the engineer, research workers engaged on the problem of industrial fatigue have also their part to play in studying the design of machinery from the point of view of the comfort and physical convenience of the workers. This is one of the problems that are now engaging the attention of the Industrial Fatigue Research Board, and the inquiry is likely to be fruitful in results.

Time and motion study is another important aspect of the industrial fatigue problem. Most people are familiar with the work that was initiated by Mr. Taylor and Mr. Gilbreth in America. We know how, as the result of a brilliant piece of investigation, Mr. Gilbreth reduced the motions involved in bricklaying from eighteen to five, and increased the number of bricks laid per man per hour from 120 to 350. We are familiar with Mr. Taylor's studies in regard to the rate of loading pig-iron. We know, too, that "scientific management" met with determined opposition in America when it was first started. But it is important to remember also that this opposition has died down, and that American trade unions are in general strong supporters of scientific management. Many of them, in fact, have their own efficiency engineers, whose task it is to educate backward managers, as well as workers, in efficient methods. And herein, I think, lies the main difference between America and this country. We are in no way behindhand in scientific research, but I fear that the attitude of trade unions to scientific management is less friendly here than in America, although I believe that the Industrial Fatigue Research Board, of which the chairman is a prominent Labour member of Parliament, has done much to break down earlier suspicions. But here is one of the ways in which employers and workers might with great advantage co-operate more closely.

discovery that a subdivision of labour increased the sum total of work produced by any given number of men. Hand spinning, for instance, was now looked upon through very rosy glasses as one of the "old crafts," but to sit and spin alone would be indeed monotony to our modern girl.

Miss Dowding thought that there was very little real monotony felt by girls in well organized factories to-day. There was a type of girl who was constitutionally or emotionally unable to work either with machinery or on piece-work, because her natural rhythm was of a leisurely type. There were other girls who were truly mechanical and loved machinery, becoming peculiarly attached to their own particular machine, and others whose activities were excited and kept elated by piece-work. It was in greater care in the choosing and placing of the workers, and the more thoughtful provision and arrangement of their working environment, that the prevention of the mental and physical ill effects of repetitive production could be looked for. Correct placing in the first instance or transference in the early days determined frequently between the drifter and the contented artisan. Correct placing had its effects upon the whole group of workers. Nothing was easier than for a discontented worker to turn a pleasurable job into monotonous drudgery for a whole group of workers. This suggestibility of the workers made the whole problem of monotony so difficult. It was a most contagious complaint, and they should be extremely careful before they labelled monotony as an urgent industrial problem. Miss Dowding had been unable to collect evidence of any serious deleterious effects arising from repetition work, save in isolated cases of unsuitability which were capable of readjustment. In factories with good conditions it was easier to find instances of keen resentment and genuine distress at a suggested transfer. The whole question was largely one of the attitude of mind of the worker. It was the general feeling of being absorbed into some vast impersonal "thing" which was the foundation of the irksomeness of factory work—whether repetitive or otherwise. It was only by attacking this impersonality that the "dead level" of work could be altered.

In a paper which she was unable to read through absence, Professor WINIFRED CULLIS submitted that the word "monotony" now definitely carried with it more or less descriptive colour. To speak of a job as monotonous did not mean only that it was repetitive, made up of a series of efforts which might or might not in themselves be unpleasant, but that the general effect was an unpleasant one—in other words, it connoted an unpleasurable reaction to repetition. The discussion dealt with the repetition of actions which, though not sufficiently arduous to bring into play the type of protection associated with heavy muscular work, yet could produce a state of exhaustion quite as serious, or even more so. This kind of fatigue or boredom which came from repetitive work might be due to fatigue in certain nerve centres concerned in the performance of the action; or, as had been suggested by C. S. Myers, the fatigue might arise from the fact that the successful performance of a certain act necessitated the suppression of other actions not compatible with it. These inhibited mental processes became more and more difficult to suppress as fatigue from that inhibition set in. Investigation had shown that individual differences were very marked in reference to reaction to repetitive work. In the laboratory tests those subjects who gave the best showings on the findings of the intelligence tests were the most variable workers on the findings of the experimental tests. The introduction of rest pauses always had a beneficial effect; there was less fatigue, and the average output was increased quite definitely. Group working might counteract the particular desires or inclinations of an individual member of the group, and the fatigue of repetitive work might be lessened by paying special attention to the general arrangement of the work, and more particularly to the adjustment of the machine to the worker. In fact, the requirements were to make the times of work such as to be consistent both with the health of the worker and the prosperity of the industry; to introduce rest pauses under expert advice as to the period and duration, since these differ from industry to industry; to give sufficient free time to the worker to undertake activities of a different kind; and to give the individual such an education as would enable him to make an enlightened and stimulating use of his spare time.

Dr. J. STEWART MACKINTOSH (Hampstead) said that the issue was ultimately a biological one. The inhabitants of this country had passed successively through the hunting, pastoral, and agricultural stages, and the industrial era was at least as great a revolution as those which had preceded it. The simple traditions, whereby communities attached to the soil through many generations maintained their health, proved unserviceable to the huge, uprooted, and floating populations of the industrial districts. A new and more complex tradition must be devised by which physical and psychological adjustment to new conditions might be effected. They had to ask themselves the searching question whether they were eliminating the elements in their national composition which had made them great, or whether they were still going to maintain the quality of the British people by adapting the industrial machine more to the man and the man less to the machine.

Dr. J. JENKINS ROBB (Birmingham) agreed that it was most difficult to separate monotony from the question of fatigue. Both seemed to him interdependent and interrelated in their complexity. He feared that there was a distinct danger in the overemphasis of the question of psychology in industrial conditions, and in too much being claimed for it might lurk a factor akin to psycho-analysis. Psychology was not an exact science, and therefore its claims, so far as labour conditions were concerned, should be carefully watched. In reading the council's reports he felt they were in the most initiatory stages, that some of their tables referred to very small groups, the smallness of the group making conclusions unsafe. Judgement and conclusive evidence must be based on large experience properly correlated. Monotony was not so apparent to the less educated, an argument against such labour, though thoughtful workers, he found, resented it. In his opinion much of what was termed neurasthenia was so caused. He would like to know the relation of monotony to sickness benefit, for in looking into this question in a large group of organized workers in a friendly society's report, he found that in this section sickness was now costing more, and last year showed that income from sick rates did not meet expenditure. Taylor's motion study had for its object increase of production, and even Taylor's figures showed that while production went up to a great extent, wages made a comparatively small advance, and the percentage of rejected was high. So the present-day worker was suspicious of any system or plan which meant observations with a stop-watch in hand so that he might be speeded up; for to him it meant, as a rule, a relative drop in wages; it bred discontent; and discontent in work was twin brother to monotony.

Dr. J. LOCKHART (Nottingham) objected to the frequent use of the term "neurasthenia" in certificates. When the patient was only vaguely ill the panel doctor, whose certificate alone was valid for benefit, had to put something down. He used the word "neurasthenia"; and the label, once applied, took months to unstick. Medicine was a clinical problem; if industrial medicine was to be any good it involved co-operation with the doctor outside. Dr. Lockhart desired that the Ministry of Health should make this co-operation official.

Dr. CHRISTINE MURRELL (London) believed that the element of compulsion produced monotony. She hoped that the development of machinery would in time remove monotony to the machine. The testing of vocational capacity was of the utmost importance.

Dr. C. FORBES (Aberdeen) said that monotony appeared, at the present time, to be an essential part of industry. It might be anticipated that the progress of invention would gradually replace by mechanical devices the more monotonous processes now carried on by human beings.

Confirmatory evidence of the adverse effect of high temperatures has recently been obtained by Mr. Bedford and myself in coal mines. It is almost impossible to compare the output of different miners, as the ease with which they get the coal varies so much from day to day and from place to place, so we adopted another method of measuring their physical efficiency. This depends on the fact that no man, when engaged in heavy work, is able to work continuously. Inevitably he rests occasionally, so we kept individual coal hewers under observation for a period of one and a half to two hours each, and noted down the number and duration of their rests from work. Observations were made on 138 men in all, and we found that whilst the men working under the best atmospheric conditions, when the wet-bulb temperature was 66° F. and the cooling power (as estimated by wet kata-thermometer) was 15 to 18, rested for seven minutes an hour on the average, those working under more adverse conditions took longer rests, and the men working under the most adverse conditions of all, when the wet-bulb temperature was 79° and the wet kata cooling power was 6.4, rested for twenty-two minutes an hour. The atmospheric conditions influenced the speed of work as well as the rest pauses, for we found that whilst, under the best conditions, the men took eight minutes to fill each 10 cwt. tub with coal, they took 9.6 minutes, or 20 per cent. longer, to fill them under the most adverse conditions. From these data we were able to calculate that the efficiency of the men working under the most adverse conditions was 41 per cent. less than that of the men working under the best conditions, whilst with intermediate conditions intermediate reductions of efficiency were observed. The men appeared to be particularly susceptible to air movement, and a moderate improvement of ventilation produced a considerable increase of output, so we seem justified in concluding that all men engaged in heavy work which causes them to perspire freely are considerably benefited by good ventilation.

In spite of the adverse effect of poor atmospheric conditions on efficiency, it does not necessarily follow that the health of the men is affected. In order to obtain direct information on the subject Mr. Rusher and I obtained access to the National Health Insurance cards of 22,000 iron and steel workers, and determined the time lost from sickness over a six-year period. We found that the hotter and heavier the work of the men the greater their loss of time from sickness; for the steel melters, to whom I have already referred, lost 23 per cent. more time than the average, whilst the puddlers lost 20 per cent. more, and the tin-plate millmen 12 per cent. more. On the other hand, the iron and steel men who worked at ordinary temperatures lost 9 per cent. less time than the average. The excess of sickness in the men exposed to high temperatures related chiefly to rheumatism and respiratory diseases. This sickness was largely due to the men sitting about, in the intervals of their work, in clothes which were damp from perspiration, and we concluded that, generally speaking, physical fatigue influenced health indirectly rather than directly. This conclusion was supported by the mortality data, for the various groups of iron and steel workers investigated showed a lower mortality than the general population (of all males, occupied and retired), with one exception. This related to the steel melters on open hearth furnaces. Their mortality was 20 per cent. greater than the average of all males, and 26 per cent. above the average of our whole group of iron and steel workers. We concluded that the excess of sickness and mortality in the steel melters might, in some degree, be the direct effect of the work of furnace mending, as this is far more exhausting than any other kind of industrial work known to us.

Apart from its influence on general health, physical fatigue undoubtedly has an influence on accident liability. Striking instances of this fact came to my notice during the war. At a large fuse factory the hours were at first twelve a day and seventy-five a week, but subsequently they were reduced to ten a day and sixty-four and a half a week. This reduction of hours had no effect on the accident frequency of the men, but that of the women fell to about one-third of its previous value, as it so greatly relieved their physical fatigue. Again, Mrs. Osborne and I found that accident frequency was much influenced by atmospheric conditions, such as temperature. We found that the minor accidents incurred fell to a minimum at a factory temperature of 67°, whilst at a temperature of 77° they were 39 per cent. more numerous in the men. Probably this rise was due, at least in part, to the physical fatigue of the men, though it acted indirectly rather than directly by diminishing their attention and alertness.

Evidence bearing on accident liability in relation to the fatigue of miners was obtained by Davies at the Morro Velho gold mine, Brazil. In the deepest workings of this mine, some 6,000 feet below the surface, the wet-bulb temperature reached the almost insupportable figure of 89° F. A cooling plant was introduced, which cooled the intake air to 43°, and the wet-bulb temperature in the deepest workings to 80°, and it was found that whilst in the sixteen months previous to the installation of the plant there were twenty fatal accidents, they were reduced to six in the subsequent sixteen months. Again, Mr. Bedford and I found that the accident liability of the miners studied by us was distinctly influenced by the atmospheric conditions. We obtained data relating to 3,000 miners for a six-year period, and we found that the accident rate of the men working at the coal face of the deeper and hotter seam in a mine (with a wet-bulb temperature of 74°) was 52 per cent. greater than that of the men in the upper and cooler seam (with a wet-bulb temperature of 62°), in spite of the fact that the physical conditions, such as the soundness of the roof, were better in the deeper seam than in the upper one.

It is desirable that further evidence on the subject be obtained before a definite conclusion is arrived at, but in the light of the information so far available we are justified in assuming that improvements in the atmospheric conditions under which the miners work would have an appreciable effect in reducing the terrible accident mortality to which they are subject.

To sum up, it appears that whilst the physical fatigue induced by heavy industrial work is apt to reduce health and efficiency and to increase accident liability, much can be done to diminish these adverse effects by improving the atmospheric conditions under which the work is carried on.

DISCUSSION.

Dr. J. STEWART MACKINTOSH (Hampstead) said that fatigue phenomena might be excited by agents other than excessive muscular effort, aggravated or not by an ill devised environment. Toxic and psychic influences were also potent determinants of physical fatigue. Toxic causes included bad or unsuitable food (with its disturbance of the digestive and other systems of the body), septic foci, endocrine disorders, etc. Again, anything provocative of mental conflict, such as trouble in the home or the young man courting another girl, frequently resulted in diminished output or carelessness through a portion of the total available energy of the individual being consumed by intrapsychic tension. Fussy or inquisitive interference by so-called "welfare workers" was to be deprecated; but the hinterland as well as the foreground of the industrial field must be surveyed. Much good work could be, and some had already been, done in this regard by persons possessing the requisite tact and knowledge.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SCOLIOSIS DUE TO UNILATERAL MUSCLE SPASM.

THE following case is of some interest and sufficiently rare to warrant publication.

In March, 1924, a girl, aged 15, had what appeared to be an attack of lumbago; it became more acute until after about ten days she developed a bilateral sciatica. Pain was worse on walking and wore off somewhat during the day. In spite of salicylates, and later complete rest in bed, pain and stiffness increased. Diathermy and, later, change of air gave no benefit. She then went to Bath, where ionization, baths, and hot packs were tried, at first without effect, but later the sciatica ceased to be continuous and was only brought on by movement, and the back became temporarily less stiff after the baths. At this time

It has been established that a scientific study of the motions in industrial operations has led to the elimination of much unnecessary effort. The study of posture, change of posture—the method of carrying weights, for example—have an important bearing on the well-being of the worker and contribute to the lessening of fatigue as well as the increase of efficiency. In this work the Board has received valuable assistance from the National Institute of Industrial Psychology. An important aspect of motion study which may lead to valuable results is the study of classes of work that involve the excessive use of certain muscles, and set up a local fatigue which may result in illness. Telegraphist's cramp is a case in point. It may be possible sometimes to bring other muscles into play and thus relieve the strain, or steps may be taken to improve the circulation through other muscles, since it has been established that recovery from severe fatigue in a sharply localized group of muscles may occur by the removal of the fatigue product—lactic acid—through other parts of the body.

Another subject of considerable importance to those interested in the problem of industrial fatigue is that of rest pauses. What is the optimum spell from the point of view of efficiency and the well-being of the worker in any given trade? Dr. Vernon and Mr. Wyatt have collected important evidence which tends to prove that wherever spells of work are four and a half hours or longer the judicious use of rest pauses of from five to ten minutes is beneficial. Hours of labour are to-day a subject of political controversy rather than of scientific inquiry; this is to be regretted, because the problem will never be solved by cries of "slave-driver" and counter-cries of "slacker." Those of us—and they are many—who believe that employer and employed alike should give to the community the best work of which they are capable, consistently with physical and mental well-being, will probably agree that more time should be given to the scientific study of the problem, believing that along these lines alone can be found a solution which safeguards both the welfare of the worker and the well-being of the community.

I have mentioned certain subjects which appear to have a direct bearing on the problem of industrial fatigue, but there are many others which ought not to be ignored. One of the most important is the effect of temperature upon output. Dr. Vernon has shown that in heavy work, especially when it involves exposure to high temperatures, output undergoes a consistent seasonal variation, being with very few exceptions greatest in winter, least in summer, and intermediate between the two in spring and autumn. Again, there is evidence to show that the capacity of workers in hot mines is some 30 per cent. less than that of workers in cool mines. This, perhaps, goes to prove that the natural protective instinct is at work to prevent workers from putting an undue physical strain on themselves in unfavourable conditions. But it also shows the importance of studying problems of ventilation and atmospheric conditions with a view to minimizing fatigue. It is also important that the incidence of sickness in the heavy trades should be more closely studied. Dr. Vernon has shown that in the iron and steel trade men on the heaviest work experience the most sickness—mostly rheumatism and respiratory diseases. Probably this is due to the greater risk of chills, and it might largely be prevented by proper precautions.

Other subjects which might be mentioned are the proper lighting of factories, the provision of baths in certain trades, liability to accidents, vocational selection and guidance, all of which have a bearing on the problem of industrial fatigue; but I think I have gone far enough for my purpose. My object has been to try to show that there are many problems connected with fatigue which repay study. There is still much to be done to improve the conditions under which industrial work is carried out, and it is of national importance that the operations of the Industrial Fatigue Research Board should be encouraged, not merely by the Government, but by employers and workers alike. In some respects the Board is still groping in the dark; in some cases it is only able to carry out laboratory experiments because the necessary co-operation of the industries concerned is not yet forthcoming so as to enable large-scale experiments to be made. But important results have already been secured, and, since the effect of its work is cumulative, I feel confident that, if it receives the support it deserves, the Board will render services of lasting importance to the industries of this country.

II.—H. M. VERNON, M.D., B.CH.,

Investigator for the Industrial Fatigue Research Board.

THE opener of this discussion has dealt with the physical effects of fatigue in general terms, so it may be worth while to bring to your notice some specific instances of fatigue effects which have been investigated during the last few years. Fatigue affects both the health and the efficiency of the workers, but as it is much easier to measure its influence on efficiency than on health, I will first describe some of the observations I have made on fatigue in relation to working capacity. My first instance relates to the tin-plate trade. In the manufacture of tin plates, "bars" or plates of steel, usually about 20 inches long by 9 inches wide and weighing 20 to 40 lb., are heated to a bright red heat in a furnace. The furnaceman pulls them out, one by one, by means of long tongs, and pushes them across the floor to the rollerman, who picks them up with short tongs and passes them between heavy revolving iron rolls. This flattens them out to about three times their previous size, and then they are taken in hand by the doubler, who folds each sheet over, and presses down the bend by means of his foot (on which he wears a special boot). The bend is further flattened by means of a mechanical squeezer, and then the sheet of metal is flung back to the furnaceman, who returns it to the furnace for a further heating. During the whole of these operations the sheets of steel remain red-hot, so the men have to endure exposure to a very large amount of radiant heat, as well as suffer the fatigue of lifting the heavy sheets of metal. They stream with perspiration, in spite of their wearing short shirts, open at the waist and neck. As the result of observations collected at five factories over a period of several years I found that the output of the men was at a maximum in January, the coldest month of the year, and fell steadily till it reached a minimum in July and August. Then it rose again steadily as colder weather set in. However, this seasonal variation was by no means the same at all the factories. Many of the factories have artificial systems of ventilation in which cool air is blown down on the heads of the men, and at the best ventilated factory I came across the summer output of the men was only 3 per cent. less than the winter output. At another factory, where the artificial ventilation was moderately good, it was 6 per cent. less, while at two other factories, where there was no artificial ventilation at all, it was 11 to 13 per cent. less. For reasons which I will not go into now, I concluded that the installation of a thoroughly efficient system of ventilation in an unventilated factory would increase the average output for the whole year by 12 per cent. or more.

I have described these observations on tin-plate millmen in some little detail as the conclusions hold, in greater or less degree, for many other classes of men employed in the iron and steel trade. Take the steel melters who produce steel on open hearth furnaces. When these men have tapped their furnaces, and run off the molten steel, amounting in some instances to 100 tons, they sometimes have to mend the floor of the furnace. They do this whilst it is still white-hot, and as they approach within a few feet of the open furnace doors the work is excessively hot and exhausting. I found that the output from the steel furnaces was distinctly less in the summer than in the winter, and in one steel works where the ventilation was poor the summer output was 11 per cent. less. In other works, where the ventilation was good, the reduction of output was much smaller. Similar seasonal variations were observed among the men working at the rolling mills and the blast furnaces, and the men engaged in puddling wrought iron; so it may be laid down as a general rule that the more strenuous the work, and the less favourable the conditions under which it is performed, the more does the output tend to fall off during hot weather, in consequence of the extra fatigue induced.

expense. It seems that Ellis Island, far from being a source of expense, returns a handsome profit. In the year ending June 30th, 1923, the net profit of the island was rather more than 1,800,000 dollars. If the American Government had already devised a method of preventing any but the physically and intellectually elect from entering its territory, and of securing an annual bonus of more than £350,000 as well, our reverence for the great republic would be, if possible, increased. It does not, however, appear that Ellis Island quite rises to these heights. The actual psychological testing, as described by Dr. Boody (we do not, of course, refer to her own studies of small groups of children), does not seem to be anywhere beyond the level of technique of any medical man, and although Dr. Boody speaks with no doubt justifiable admiration of the skill of the medical staff, one has that feeling of regret so often felt by readers of the novels of the late Mrs. Humphry Ward. That accomplished novelist was prone to assure us that the conversation of her characters was wonderfully brilliant, but she omitted to give us satisfying examples. What Dr. Boody does enable us to realize very vividly is what an extremely disagreeable place Ellis Island must be. One sees the shepherding of immigrants along passages and into pens:

> "People, here again, often criticise the partitions or pens, as they call them, which are used to make the immigrants go in the right direction, or to keep them in the appropriate place. If these critics had once tried to stop a stampede into the *wrong* place, when 15 different languages would have been needed to make all understand, and when there was no way of knowing which language would cause the desired effect on the leading man, they would need no explanations of the great usefulness of all partitions, not only for the convenience of the examiners, but for accomplishing the greatest saving in the immigrant's time and comfort."

Then there is the period of waiting for the next move—"a time of tension, and specially so for the women, in that the children, who always go with the women, are restless—often hungry and fretful." People *will* ask questions, too, in unintelligible languages, and "the great skill that all workers at Ellis Island have developed in avoiding, where necessary, direct answers to questions, is very remarkable." What people do when waiting for an examination "is also a matter of great interest. They may walk, or sit stupidly, or sit with a most alert interest in everything that is happening in the waiting room around them. One girl slept. That does not often happen. The process is not conducive to sleep." The separation of members of a family, one perhaps being detained for special medical examination while the others pass on, is attended with some emotional disturbance, but it is comforting to know that "the cause is often traced, not to the main feature of separation and anxiety, but to some small and little unexpected thing." Still, there is evidently *some* emotional disturbance:

> "At the separation point, where one way leads to the Immigration floor, and the other, parallel to it for a distance, leads to the Doctor's rooms, the wire dividing partition is covered with canvas; but after a few yards, the canvas covering is discontinued. Now at the time of separation, there is a shock, and people stop. Moved on by the attendant, as long as the canvas keeps them from seeing their companion, they 'move on,' to stop at once when the removal of the canvas gives a chance to talk, and pass belongings back and forth. This means that the passage is kept from being blocked, and yet that a chance is given for communication, before the pathways finally separate."

For the sheep who pass to the immigration floor the ordeal is almost finished. The illiteracy test must be passed at the immigration inspector's desk, certain questions answered, and it is all over. For the goats there is more to come. An immigrant held back for inquiry by a board of three inspectors is not allowed to see his friends, but may call witnesses, and the calling in of the witnesses is, says Dr. Boody, "a most interesting moment to watch." It is so because

> "the sister may be looking at the brother for the first time in many years, or a woman, for the first time, may be seeing the man that she has come thousands of miles to marry. Yet in this moment, there is no break in the proceedings. The immigrant is not allowed to speak to the witness—the witness sometimes does not even glance at the bench where the immigrant is sitting. All thoughts center on the inquiry itself. Personal thoughts have no place. But if the verdict is favorable, and the word of admission is briefly announced, witnesses and immigrants, in the midst of tears and embraces, may have to be swept out of the inquiry room together, by the messenger who has to clear the decks instantly for the oncoming case."

Whether some small percentage of the 1,800,000 dollars of annual profit might not be devoted to rendering this interesting moment a little less interesting—after all, prisoners on remand may see their friends—is a question we have not sufficient knowledge to answer. But justification of our opinion that Ellis Island is an extremely disagreeable place has been given, and we conclude by thanking Dr. Boody for her valuable book.

THE ABDOMEN IN LABOUR.

THE Oxford University Press has issued, in a book with the title *The Abdomen in Labour*,[2] the essay by Dr. NORMAN PORRITT to which the British Medical Association this year awarded the Sir Charles Hastings Prize. The subtitle is "A General Practitioner's Clinical Study of the Parturient Abdomen," and it is briefly a plea for the importance of the examination of the abdomen in parturition. Dr. Porritt is one of those men who, while engaged in a busy general practice, yet find time, as did the late Sir James Mackenzie, to take careful notes and often drawings of their cases. Dr. Porritt's observations were made during the period of six years preceding 1910, and in that time he accumulated nearly sixty sketches of the abdomen of women whom he delivered, as well as careful notes of the abdominal condition in numerous other cases of labour. The author is very modest in regard to the merit of his drawings, but the important point is that they formed a graphic record which at any rate conveyed much to his own eye, and in many cases must convey a great deal to the eye of every reader.

With the conclusions of the author we need not deal in detail. They reinforce from practical experience arguments that have found their way into most modern textbooks of midwifery. The significance of the book—and in our view this significance is profound—is that here we have a general practitioner coming to the assistance of the specialist authors of textbooks and teachers of midwifery, and proving up to the hilt from his own experience that practice in the abdominal examination of the parturient woman enables one to dispense in very large measure with the procedure of vaginal examination. Dr. Porritt has become profoundly impressed with the numerous advantages which this reduction in the number of vaginal examinations may confer. We offer our cordial congratulations to him, for he has, in our opinion, done a very distinct service to his fellow practitioners by his teaching. We would like to think that this little book, which can easily be read in an hour, and which costs only 5s., will find its way into the library of every general practitioner throughout the country.

DIABETES MELLITUS.

THE second edition of GRAHAM'S *Pathology and Treatment of Diabetes Mellitus*[3] contains many alterations consequent upon the advances made in the knowledge of carbohydrate metabolism since the first edition was published in 1923. The treatment of diabetes by insulin has made considerable progress, and Dr. Graham has added new chapters on the special properties of insulin and on the details of treatment with it. These chapters are written with Dr. Graham's customary care and good judgement. He is greatly to be congratulated on the happy way in which he presents his description of scientific facts, and his accounts of the experimental work of himself and others add remarkably to the interest of a book which is essentially clinical.

One point alone occasions some surprise. Dr. Graham inclines still towards a certain degree of undernutrition in the dieting of diabetic patients. He still advocates a "ladder" diet which only brings the patient gradually to a full "maintenance" diet. This has not proved, in the opinion of other observers, so satisfactory as the Toronto

[2] *The Abdomen in Labour.* By Norman Porritt, M.R.C.S., L.R.C.P.Lond. London: Humphrey Milford, Oxford University Press. 1926. (Cr. 8vo, pp. xiv + 75; 29 figures. 5s. net.)

[3] *The Pathology and Treatment of Diabetes Mellitus.* By George Graham, M.A., M.D., F.R.C.P. Second edition. Oxford Medical Publications. London: H. Milford, Oxford University Press. 1926. (Cr. 8vo, pp. vii + 168. 8s. 6d. net.)

she developed intermittent spasm, sometimes of the middle portion of the right erector spinae and sometimes of the right abdominal muscles, bending her either directly to the right or forwards and to the right. The spasms increased in violence and were only loosened by the hot baths; lateral curvature and pelvic tilting increased till she could only stand on one leg, and kneeling was the only tolerable posture one whole night being spent in this position. The spasm generally came on during sleep and woke her up. Massage and exercises made matters worse. A skiagram taken at this time was negative. She returned home and remained in bed with daily massage, but the lateral spasm and consequent scoliosis increased. Hysteria was diagnosed by one physician, on what would appear somewhat inadequate grounds, and an osteopath manipulated the spine, but no benefit accrued. By August, 1924, the spasms were so acute that sleep could only be had in short spells. At the suggestion of a neurologist intramuscular injections were made under an anaesthetic; there was no immediate effect, but in September the spasms decreased in frequency and violence, the pain diminished and she could sleep better, and even walk occasionally for some distance, although the abdominal muscle spasm attacked her when she became tired. However, the erector spinae spasm and scoliosis increased with occasional exacerbations, generally relieved by recumbency. The condition remained stationary through the winter.

In February, 1925, she was seen by Sir Robert Jones and myself. Pain and acute spasm were intermittent, but the right erector spinae between the mid-dorsal and mid-lumbar regions was in continuous spasm and stood out as a hard mass, and the spine was correspondingly held convex to the left, with pelvic tilting. There was no permanent abdominal spasm. She appeared to be a most intelligent and healthy girl with no symptoms of hysteria. We came to the conclusion that the trouble was caused by adhesions around the spine and nerve exits, and accordingly mobilized the spine fully under an anaesthetic. Many adhesions were felt and heard to give way. From that time onwards she has been under my care.

The day after the mobilization the spasm had disappeared and only occasional suggestions of it remained for about a month. Exercises were prescribed and have been continued, and I have seen her three or four times during the year ending April, 1926, and she has remained perfectly well and with no scoliosis.

This case never suggested a diagnosis of hysteria and was entirely unlike the hysterical curvatures and tilted pelves with which we are all familiar. It was obvious that there was a definite irritative lesion of the nerves supplying the affected muscles. Personally, I had seen one similar case, much less severe, and Sir Robert Jones tells me that he has seen three or four such cases in the course of his experience, but none more marked than this.

London, W. P. JENNER VERRALL, F.R.C.S.

RECOVERY AFTER INTRACARDIAC INJECTION OF ETHER.

IN view of the cases recently described, the following, which have lately occurred in my practice, may be of interest.

Case 1.—An adult male on whom I was proposing to operate for inguinal hernia gave no history of previous heart trouble, and the heart sounds appeared normal. Just as I was about to make the primary incision with the patient under open ether he stopped breathing, no pulse could be felt at the wrist and no impulse at the apex. Artificial respiration was commenced and both strychnine and ether given hypodermically, but, as was to be expected in the absence of circulation, these were ineffective. One cubic centimetre of ether was injected directly into the left ventricle, and almost immediately the pulse became palpable, breathing began again, and I was able to do the radical operation. The patient made an uninterrupted recovery and suffered no after-effects.

Case 2.—I was sent for by the midwife to a woman in labour (sixth confinement), and found a shoulder presentation with one hand in the vagina. There was a history of previous "heart weakness," and she had a systolic murmur heard at all orifices. I gave chloroform while my colleague proceeded to turn and pull down a leg. She became rather grey, so I went cautiously with the anaesthetic. The after-coming head jammed at the outlet, and during manipulations to release this the patient stopped breathing. I could feel no pulse and no apex beat. Artificial respiration and subcutaneous medication were again tried, but were ineffective, so that 1 c.cm. of ether was injected directly into the left ventricle. I had my finger on the radial artery and the return of a palpable pulse was very striking. The first beat was felt after perhaps ten seconds, the second about five or six seconds later, the third after about three seconds more, and thereafter the normal rhythm was rapidly established. The child was extracted and was, of course, dead, but the mother made an uninterrupted recovery and suffered no after-effects.

Whether in these two cases the heart actually stopped or went into fibrillation I cannot say. But the response to intracardiac ether was dramatic and most gratifying to all concerned.

Wrotham, Kent. N. HAY BOLTON, M.D., F.R.C.S.Ed.

Reviews.

ELLIS ISLAND.

THE title of Dr. BERTHA M. BOODY's very interesting book, *A Psychological Study of Immigrant Children at Ellis Island*,[1] is somewhat misleading; her experimental study occupies little more than a third of the pages, and, although suggestive, particularly with regard to the possibilities of testing intelligence when examiner and examinee have no language in common, would be too slight for separate publication. That her work is thoroughly worthy of book form is due to the fact that it contains a readable account of the history and present administration of immigration laws in the United States of America. Fears that the United States might become the dumping-ground of undesirable aliens are not new. In 1819 these words were used by the committee of a New York society: "As to the immigrants from foreign countries, the managers are compelled to speak of them in the language of astonishment and apprehension. Through this inlet pauperism threatens us with the most overwhelming consequences." Similar apprehensions were voiced during the ensuing fifty-three years, but it was not until 1882 that any Federal regulation was attempted, when lunatics and idiots were legally excluded. After 1891, when deportation of aliens admitted contrary to law was ordered, control became tighter. In 1907 feeble-minded persons were debarred, in 1917 all aliens over 16 unable to read the English or some other language were excluded, and by the Act of May 19th, 1921, immigration was restricted to a quota of 3 per cent. per annum of the number of the particular nationality recorded in the census of 1910. Finally, in May, 1924, the quota was changed to 2 per cent. of the foreign-born population shown at the census of 1890. After July 1st, 1927, the annual quota is to be a number bearing the same ratio to 150,000 that the number of inhabitants of the United States at the census of 1920 having that national origin bears to the whole population. Dr. Boody says that the result will be the reduction of the number of immigrants from 360,000 to about 150,000, but, unless the term "national origin" is to be understood in some very peculiar sense, we should suppose that the annual number would be considerably short of 150,000. This at least is quite clear—namely, that immigration will soon be a relatively unimportant source of population increase in the United States. Already there is a great difference between the million and a quarter of the "peak" year of 1907 and the net influx of less than half a million in 1923.

The object of this legislation and the administrative measures based upon it is not only to ensure that those admitted are physically sound, but, in the words of one authoritative body, to ensure that "no alien should be admitted who has not an intellectual capacity superior to the American average." Since the would-be immigrants speak twenty different tongues, and include children who cannot read or write, psychological tests alone present a formidable problem. It is not easy to devise a rapidly applicable test of intelligence success under which is wholly independent of acquired knowledge, and the language difficulty greatly complicates the task. When, in addition to all this, it is desired to take account both of eugenic factors and the mysterious attributes of "race," one realizes how difficult is the problem which American administrators and men of science are attempting to solve. The scientific and administrative machinery so far developed functions on its largest scale in Ellis Island, a name which neither the British Ambassador's report of three years ago nor recent press reports have favourably recommended to the home-keeping Englishman. The fourth chapter of Dr. Boody's book, which describes the present procedure, is sure to be read with particular interest. At the outset one perceives that the American Government has at least overcome one of the prime difficulties of both research and administration—that of

[1] *A Psychological Study of Immigrant Children at Ellis Island.* By Bertha M. Boody, Ph.D. Mental Measurement Monographs, Serial No. 1. Baltimore: The Williams and Wilkins Company; London: Bailliere, Tindall and Cox. 1926. (Med. 8vo, pp. 163. 18s. net.)

established journal *Mitteilungen aus der medizinischen Facultät der Kaiserlicher Universität zu Tokyo* has in consequence ceased publication after a long and honourable career. The editors of the new journal, which has an English title, *Japanese Journal of Medical Sciences*, will publish papers written in English as well as German, which is undoubtedly a wise course. The system of dividing the journal into separate parts appears to be so far sound that it will make it easier for anyone to find the papers on a subject in which he takes particular interest. Apparently under this scheme a number of a part will be published as soon as a sufficient amount of material has been collected. The success of the scheme will, of course, depend very largely upon the frequency with which it is possible to publish numbers in this large variety of different subjects, for unless these can be issued with fair regularity there will be undue delay in publication.

We have before us the first number of the first volume (Part IV, Pharmacology). It is a substantial production, but the danger of the delay in publication is illustrated by the first paper, which is by Dr. Seiji Ogawa, on tetania parathyreopriva; it is dated December, 1924, but during the past eighteen months a very large amount of important work has appeared on the parathyroids, and the article suffers in some degree from the delay in its publication.

The number contains six articles, and most of them come from the University of Tokyo. An article of particular interest is by Dr. K. Otsuki on the action of yellow phosphorus on bone regeneration; he has performed a large number of experiments, and the article is illustrated with excellent plates; he finds that doses of phosphorus too small to produce intoxication cause an increase in callus formation in fractures and a delay in callus absorption. He concludes, therefore, that the action of phosphorus on the healing of fractures is harmful rather than helpful.

NOTES ON BOOKS.

DR. J. G. DE LINT, lecturer on the history of medicine at the University of Leyden, has brought out the first instalment of an *Atlas of the History of Medicine*,[7] dealing with anatomy. Dr. De Lint was stimulated to undertake this work by the Vesalian exhibition at Leyden in 1915, and a draft was ready in 1916, but publication was delayed by the war. The 199 figures illustrate the evolution of anatomy from the earliest times down to comparatively modern days, the last two portraits being those of Charles Darwin and the veteran Dutch biologist Hugo de Vries. The first figure is of a clay model of a sheep's liver, which was used for instruction in Babylonian temple schools about B.C. 2000. Some of the figures are from photographs lent by Dr. CHARLES SINGER, who in a thoughtful introduction dwells on the advantages of a study of medical history, and how the method of presenting a series of pictures overcomes some of the difficulties inherent in the study of the history of science. Wherever possible the original drawings of discoverers of anatomical facts have been reproduced, and where this was not available a portrait of the discoverer or of the title-page of his book has been used. The interesting and generally well produced illustrations naturally include a good many Dutch anatomists, some of whom are not so familiar as no doubt they should be—for example, Cornelis van 's-Gravezande of Delf and Ysbrand van Diemerbroek Montfoort, both fine full-page portraits. Each illustration is accompanied by a brief description, and attention may be called to the illustrations connected with Harvey and his critics, such as James Primerose of Hull, Jean Riolan, and Caspar Hoffmann, and of his supporters, such as Jan van Beverwyck, Hendrik van Roy, Antony Deusing, and Lazarus Riverius.

The *Hand-Atlas of Clinical Anatomy*,[8] by A. C. EYCLESHYMER and T. JONES, contains 395 line drawings, mostly in colour. Some of these are systematic dissections, the various structures being grouped in systems, such as the bones and ligaments, blood vessels, nerves, etc.; others are regional dissections to illustrate the anatomical relations of particular localities. A number of complete sections also show structures as they appear in frontal, sagittal, and transverse sections. These are all well done, and should help the student. This atlas contains also two other types of picture which will considerably extend the field of usefulness of the book. These are the projection pictures, which represent the deeper structures in their natural position as though the overlying structures were transparent, and the surgical incision pictures, which show the anatomical relations observed in the early stages of the commoner surgical operations. The book is divided into four parts, which deal respectively with the head and neck; the thorax, abdomen, and pelvis; the upper extremity; and the lower extremity. There is an explanatory index intended to render unnecessary any descriptive text to the pictures. The B.N.A. terminology is used throughout in labelling the illustrations. Of course, a large number of the pictures are reproductions of the familiar illustrations of standard textbooks of anatomy, but many of the drawings are original. Considerable ingenuity has been used in sketching out the transparent projections. The book has developed from an earlier and smaller manual of surgical anatomy prepared for the Medical Corps of the American Army and Navy during the war.

The unending stream of additions to methods of diagnostic procedure has compelled Dr. C. L. GREENE, formerly professor in the University of Minnesota, to revise and enlarge his volume on *Medical Diagnosis*, of which the sixth edition[9] has just been received. Basal metabolism is now dealt with in a short special section, and the early diagnosis of cardio-vascular disease receives careful attention, with particular reference to the use of the more modern instruments devised to detect cardiac irregularities. Care has been taken to make the index complete and easy to consult; the illustrations are numerous and good, and the new edition will undoubtedly be as popular and useful as its predecessors.

Mr. T. CREW, clerk to the Leicester Insurance Committee, has compiled under the title *Health Compendium and Health Publicity*[10] a book which will be to health workers and members of public health committees what the familiar "Inquire Within Upon Everything" is, or was, to the housewife. There is a statement of the aims and objects, officers, and domicile of every sort of society even remotely related to health, from the Medical Research Council to the Scarpa Society and the Research Defence Society. There are also reproductions of numerous pamphlets, posters, and other forms of literature used in health propaganda in this country, the United States, and in Germany. Some of it is instructive and much of it not a little amusing. We suggest that the author might well exercise some supervision over the contents of the advertisement pages in any future edition.

[7] *Atlas of the History of Medicine. I: Anatomy.* By Dr. J. G. De Lint, Lecturer on the History of Medicine at the University of Leyden. With a Foreword by Charles Singer. London: H. K. Lewis and Co., Ltd. 1926. (12½ × 8½, pp. 96; 199 figures. 10s.)

[8] *Hand-Atlas of Clinical Anatomy.* By A. C. Eycleshymer, M.D., and Tom Jones. With special dissections by O. E. Nadeau, M.D. London: H. Kimpton. 1925. (Double sup. roy. 16mo, pp. viii + 424; 395 figures. 50s net.)

[9] *Medical Diagnosis for the Student and Practitioner.* By Charles Lyman Greene, M.D.St. Paul. Sixth edition, revised and enlarged. London: W. Heinemann (Medical Books) Limited. 1926. (8up. roy. 8vo, pp. xxvii + 1468; 709 figures, 14 plates. £3 3s. net.)

[10] *Health Compendium and Health Publicity.* Compiled by T. Crew, F.F.I., F.I.H. Foreword by Professor A. Bostock Hill, M.D., etc. Leicester: The Reader Printing Company, Ltd. (Demy 8vo, pp. v + 260; illustrated. 7s. 6d. net.)

PREPARATIONS AND APPLIANCES.

Administration of Ethyl Chloride.

MR. JOSEPH M. COPLANS, L.D.S.R.C.S., L.R.C.P. and S.Ed., L.R.F.P.S.Glas., and Mr. E. Coplans, M.R.C.S., L.R.C.P. (Lavender Hill, S.W.), send the following description of a method of administering ethyl chloride which they find minimizes the spasm and toxaemia attending this anaesthesia. A three-way tube, with rubber tubing ends, is led to the tube connecting the mask with the closed bag, and an ampoule of ethyl chloride is inserted firmly in each of the three free ends. After the mask is placed over the mouth, one tube is broken towards the bag with the fingers; the second and third are broken if it is found necessary to prolong the anaesthesia. Before giving the anaesthetic the bag is one-quarter filled with hot water, and this is kept in the bag the whole time. It would seem that the heat and the steam, mingled with the ethyl chloride vapour, have the softening and antispasmodic effect referred to. Hundreds of cases have been done by this method, often the whole mouth being cleared at one sitting.

A Micrometer Syringe Apparatus.

The accurate instrument for the measurement of extremely minute quantities of liquids described by Dr. J. W. Trevan in the *Biochemical Journal*, vol. xix, No. 6, p. 1111, is now obtainable from Burroughs Wellcome and Co. It is known as the "Agla" micrometer syringe apparatus, and is suitable for the measurement of volumes from 0.5 c.cm. (with an error of less than ± 0.1 per cent.) to those as small as 0.001 c.cm. (with an error of less than 5 per cent.). In immunological work the instrument can measure volumes of the order of 0.01 c.cm. with an error of less than ± 1 per cent. The price in London of the complete set is £2 15s. Further details may be obtained from Burroughs Wellcome and Co., Snow Hill Buildings, E.C.1.

plan of placing the patient at once on an adequate diet and balancing this diet with sufficient insulin. This plan appears to hold out a better prospect of recovery of carbohydrate tolerance and more likelihood of the patient being enabled to discontinue the use of insulin. For this reason it is doubtful whether Graham's book is to be recommended as one of the best practical guides to the treatment of diabetes. His account of the pathology of the disease is, on the other hand, excellent.

DICTIONARIES OF MEDICAL TERMS.

DICTIONARIES of medical terms, or, as they are often erroneously called, for short, medical dictionaries, have been found useful by generation after generation of medical men. Nearly three hundred years ago Bartholomew Castellus published one at Basle, on which, in 1717, Dr. John Quincy of London based his *Lexicon Physico-medicum*, which went through eleven editions. In Germany the excellent *Kritisch-etymologisches medicinisches Lexicon* of L. A. Kraus first appeared exactly a hundred years ago, and Hoblyn's *Dictionary of Terms used in Medicine and the Collateral Sciences* followed very soon after in England and reached its eleventh edition in 1887; it was written, not by a medical man, but by a clergyman, without medical training, although well versed in science. America has been very fertile in medical lexicography. Dorland's and Stedman's books are well known, and Dr. Robley Dunglison's *Dictionary of Medical Science* had attained to its twenty-third edition in 1903.

Dr. GEORGE M. GOULD of Philadelphia brought out in 1890 the first of a series of dictionaries of medical terms, and it is the latest of these that is now before us for review. *Gould's Medical Dictionary*,[4] as this is called, is really the direct descendant of the original *New Medical Dictionary* through its avatars the *Student's Medical Dictionary* and the *Practitioner's Medical Dictionary*. The editor of this and former works, Dr. R. J. E. SCOTT, tells us in his preface that this may be said to be the sum of all of Gould's dictionaries, including no doubt the *Illustrated Dictionary of Medicine, Biology, and Allied Sciences*, as well as the *Pocket Medical Dictionary*. In reference to this last Dr. Scott writes: "If every printing had been called a new edition, the current edition would be the fifty-fifth instead of the eighth."

The *Practitioner's Medical Dictionary* was certainly a compact and handy volume, notwithstanding the fact that it contained 71,000 definitions. The new volume is printed in larger type and on rather thicker and heavier paper, and contains 76,000 definitions and a number of portraits. We must confess that we cannot share the complacency with which the editor writes of these portraits. They seem to us to be very strangely selected and to be artistically unworthy of the reputation of the book. What can be said for a selection which leaves out James Paget and Jonathan Hutchinson but includes John Houston and William Allingham? With the greatest appreciation of the worth of the two latter, we must say that we cannot understand the principles on which the choice was made.

We rise from the study of such a work as this sadder if wiser. It is a saddening experience to find that there are so many hundreds of symptoms, methods, signs, operations, and so on, all called after their discoverers or inventors, but of which we are either forgetful or quite ignorant. It would need the memory of a Macaulay to retain the mere names, let alone the definitions, some of which seek to establish the inventor's claim by fine-drawn distinctions between the new syndrome, sign, or method and its predecessors.

A book, however, in so well known a succession as this needs no recommendation. Its standard of accuracy is generally high, but in a necessarily cursory survey we have noted some lapses from it which might be corrected in subsequent issues. For instance, the definition of Thomas's splints leaves much to be desired. "Lovesickness" is scarcely adequately rendered by "erotomania," which in its proper place is correctly defined as "morbid exaggeration of the affections usual towards the opposite sex." "Pillion" is probably a mere printer's error for "pilon." Among its 76,000 entries we have failed to find the following: Glisson's sling, Volkmann's ischaemic paralysis, gonad, Scarpa's shoe. Perhaps it would be too much to expect to find such an obsolete term as "algebra chirurgica," which was used in the beginning of the nineteenth century to signify bonesetting—one of the classical meanings of the word "algebra." These defects are noted in no carping spirit, but are recommended to the editor as helps towards that perfection which always recedes before the pursuit of the ardent lexicographer.

[4] *Gould's Medical Dictionary.* By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D. London: H. K. Lewis and Co., Ltd. 1926. (Imp. 8vo, pp. xi + 1398; illustrated. 30s. net.)

THE COST OF LIVING.

A HANDY little volume of the "Westminster Library," entitled *The Cost of Living*,[5] by Dr. NORMAN DEARLE, will be of interest and value to many of our readers. The phrase constituting its title is one of the most insistent in the course of popular economic discussions, and the meaning which it connotes is still a most important factor in the remuneration of civil servants and others, and has been frequently referred to in negotiations concerning the proper remuneration of various classes of medical practitioners. To give an exact meaning to the phrase, therefore, and to appreciate the different circumstances and influences which may lead to variations in the cost of living and should be taken into account in calculating those variations, is of great practical importance. These are the things to which a study of Dr. Norman Dearle's book will help us. It requires a little study and not a mere cursory reading, because it is throughout concentrated in matter and closely reasoned. After a careful examination of the real meaning of the phrase—"the cost of living"—consideration is given to the methods of the measurement of cost by means of index numbers. The subject of the relation of prices and costs to real wages or remuneration and the effect of this upon the standard of living of various classes of persons are next discussed. This is followed by an historical review of the course of prices and standards, briefly from the year 1350 to the year 1914 and more fully from 1914 to 1925. In conclusion, certain special problems bearing on the matter are considered: rates and taxes, the co-operative societies, profiteering, and the functions of the middleman.

The book should succeed in clearing away some of the misconceptions as to the method of compiling the Ministry of Labour index number. There is a widespread opinion among many classes that this index number does not in fact correspond to the actual position of affairs; yet, although he recognizes some logical imperfections in its compilation, and even though he suggests that some factors which are commonly ignored (such as community provision of education and health facilities which are in practice taken advantage of by certain classes of the population only) may properly be taken into consideration, Dr. Dearle appears to be satisfied that the index number may still be accepted as sufficiently just in its general application.

It would have been interesting to have had some comment on Professor Bowley's figures of the professional costs of living which were prepared on the basis of actual household budgets supplied by the British Medical Association and given in evidence before the Court of Inquiry on the remuneration of insurance practitioners, but these are nowhere referred to. Those figures, though they are admittedly founded upon an inadequate number of returns, appear to be quite reliable and to afford almost the only actual statistics relating to a middle-class or professional standard of living.

[5] *The Cost of Living.* By Norman Dearle, M.A., D.Sc.Lond. The Westminster Library. London: P. Allan and Co., Ltd. 1926. (Cr. 8vo, pp. 183. 3s. 6d. net.)

A NEW JAPANESE MEDICAL JOURNAL.

AN interesting departure in medical periodical literature has been made by the recently established National Research Council of Japan, which has begun the publication of a periodical[6] divided into thirteen different parts, each dealing with a separate department—physiology, ophthalmology, internal medicine, and so on. The old

[6] *Japanese Journal of Medical Sciences.* Transactions: IV, Pharmacology. Tokyo: National Research Council of Japan. 1926. (7½ × 10½, pp. 167; illustrated.)

THE BOARD OF CONTROL.

ANNUAL REPORT FOR 1925.

MANY matters of the first importance, not solely for those whose work is with the mentally afflicted, but for social workers, and indeed for all who are concerned with the public welfare, are discussed in the twelfth annual report of the Board of Control.[1] This report is all the more interesting by reason of the recent publication of the report of the Royal Commission on Lunacy and Mental Disorder, of whose recommendations a sketch was given on July 31st (p. 208). They have borne out in many instances the previous contentions of the Board and of the British Medical Association, and may, it is hoped, expedite long-looked-for reforms.

Early Treatment.

The Board has for a long time past pleaded for greater facilities for the treatment, without prior certification, of early cases of mental illness. The Mental Treatment Bill which passed the House of Lords in 1923 would have enabled this to be done; but further progress with the bill was arrested in consequence of the appointment of the Royal Commission. It must be gratifying to the Board to find that this Commission has unanimously endorsed its views, and, recognizing the necessity for early treatment, has recommended the alteration of the lunacy laws to ensure its provision without preliminary certification.

The Commission's desire that treatment of mental disorder should approach as closely as possible to that of physical ailments makes us regret, with the Board, the divorce which has been brought about between the mental hospital and the general hospital and "the failure to recognize that, among the cases grouped under the term insane, there were many whose mental illnesses were short and curable, as to whom the law, rightly solicitous as to the liberty of the subject, need not have insisted upon certification, and for whom, under progressively improving treatment, arrangements in connexion with general hospitals might have been retained with advantage to these patients, and to medicine as a science."

Need for Increased Accommodation.

In April of last year two important conferences were held—one to consider the nursing service in mental hospitals, and the other to consider in what ways the need for increasing mental hospital accommodation in England and Wales can best be met. The question of accommodation has given the Board very considerable anxiety. On January 1st, 1926, the number of notified insane persons in England and Wales was 133,883—an increase of 2,332 on the number on January 1st, 1925. This number has no necessary connexion with the incidence of mental disorders in the general population; and, indeed, there is no evidence to show that the incidence of insanity is increasing. It is in consequence of the growth of the population that further accommodation is required. The need for new accommodation is much more acute in some areas than in others. It is intended shortly to call regional conferences, the results of which, it is hoped, will show how best the pressure on the existing accommodation may be relieved.

Mental Defectives.

In its report for 1924 the Board gave special prominence to the lack of accommodation for all types of mental defectives. Instead of there being any alleviation of the situation as a result of its appeal the position has become more acute. The response by the local authorities to the Board's invitation to submit schemes for the further provision for mental defectives has been meagre and by no means commensurate with the serious position which was fully explained in last year's report. The Board regards the failure of local authorities to fulfil their duties as hampering the beneficent objects of the Mental Deficiency Act. Out of the 124 local authorities under the Mental Deficiency Act, only 17 have at present provided any accommodation, and in no case is the provision adequate to the needs of the population of the particular district. "The responsibility," says the Board, "for the degradation, crime, pauperism, and disease which follow the neglect of the mentally defective rests now on the local authorities."

An interesting section of the report deals with the problem of procreation by mental defectives.

"Many of us," says the report, "have had experience of homes where the father or mother is mentally defective, and have been deeply impressed by the tragic lives of the children. Sometimes cruel by nature—more often cruel through ignorance—generally without self control, a feeble-minded parent is utterly unfit to nurse and train children of tender years. It can be shown that many such children inherit mental defect, and though if one parent is normal this is not always the case, it is clearly a misfortune that the child who is not mentally defective should be subjected to the crass stupidity and uncontrolled impulses of a defective parent."

Many tragic case histories bear out the truth of this statement. The Board, whilst suggesting various measures which would diminish marriage and procreation by mental defectives, is none the less inclined to think that the law should be altered so as to provide that marriage by a defective when under Order should be void. Sterilization as a means of preventing procreation is discussed, and does not find favour, for the Board considers that there is a danger of some public authorities welcoming sterilization as a cheap method of ridding themselves of their obligations under the Mental Deficiency Act. The advocates of sterilization, as against the alternative measure of segregation, are answered by the Board in the following:

1. The great majority of mentally defective persons require protection, care, and control on account of their incapacity to maintain an independent existence, and apart from the question of the procreation of children.

2. Unrestricted freedom in a large number of cases would lead to a return to the conditions prevalent before the passing of the Mental Deficiency Act. Sterilization would not prevent these persons from leading useless and harmful lives in and out of Poor Law institutions, prisons, hospitals and refuges, or from spreading venereal disease.

3. As far as immediate expense is concerned, the economic burden to the State is not likely to be lessened by the discharge of sterilized mental defectives.

4. Discharge would not, in our opinion, increase the happiness of the majority of the patients at present under care in institutions.

5. Sterilization as a compulsory measure is likely to arouse public opposition, and so delay the fuller operation of the Mental Deficiency Act.

Sterilization of mental defectives is sometimes advocated, not as an alternative, but as a complementary measure to segregation, but the Board, whilst recognizing its possible application to those cases which are only under permanent institutional care because of the risk of propagation, does not favour it.

Number of Patients.

The number of rate-aided patients on January 1st, 1926, was 118,065 (males 49,253, females 68,812), or 88.2 per cent. of all the notified insane. Practically the whole of the increase (2,380) during the preceding year occurred in county and borough mental hospitals. At the close of 1925 there were 695 voluntary boarders, including 142 at the Maudsley Hospital, where the patients are on a voluntary footing, and eight at the City of London Mental Hospital, where, under the Local Act of 1924, patients can now be received on this footing. The total number of certified patients discharged recovered during the year was 6,936. The deaths numbered 8,551. The number of direct admissions was 21,784, and of these first admissions accounted for 17,345, or 79.6 per cent. of all the direct admissions.

The whole report makes interesting and stimulating reading. In a supplement a detailed account is given of the scientific research work carried out in mental hospitals during the year. The Commissioners of the Board of Control are to be congratulated on a report which bears testimony anew to their conscientiousness, sagacity, and foresight.

[1] London: H.M. Stationery Office, or through any bookseller. 1926. 12s. 6d. net.

THE POST-GRADUATE HOSTEL, LONDON.

WHEN NOT TO OPERATE FOR HERNIA.

A DISCUSSION on "When not to operate for hernia" was opened by Mr. W. McAdam Eccles, M.S., F.R.C.S., at a meeting of the Hostel on August 28th. We are indebted to Mr. McAdam Eccles for the following notes of the remarks he made.

Whilst it is a fact that a very large number of cases of hernia should be treated by operation, it is also true that there are a number of conditions in connexion with hernia which negative treatment by operation, or at any rate render such treatment undesirable. I propose briefly to refer to some of these. I will take them specifically under headings.

I.—THE TYPE OF PATIENT.

Age.

1. *The very young.* Because: (*a*) Nature tends to bring about a cure. (*b*) Very young children do not stand operation well, and a fatality would be a tragedy. (*c*) Asepsis is, to say the least, uncertain.

2. *The "aged"* (take a man over 60). Because: (*a*) The tissues are not in most cases such as allow of a radical cure resulting from even a radical operation. (*b*) Persons do not like operation and then to have to wear a truss. (*c*) A properly made and properly adjusted truss will bring about such an improvement that the person may not know that he has a hernia, and simply wears the truss as part of his clothing.

Sex.

Male.—(i) In large inguinal herniae it is difficult to occlude the inguinal canal and the apertures—superficial and deep inguinal—sufficiently so long as a passage for the spermatic cord has to remain. (ii) Where there is much disturbance of micturition, the result of enlargement of the prostate.

Female.—(i) Cases in which pregnancy is present in the later months; (ii) where the abdominal wall tissues are weak, particularly as the result of stretching from repeated pregnancies.

Visceral Lesions.

Heart.—Advanced cardiac disease negatives an operation for cure. Operation may have to be undertaken for strangulation as a last resort.

Lungs. — Any advanced pulmonary lesion. (i) A general anaesthetic is contraindicated, although a local one might be used. (ii) The liability to cough produces a liability for the return of the hernia.

Kidneys.—Any advanced disease of the kidneys.

Liver.—Especially when ascites is present.

Some General Conditions.

Obesity.—Unless reduction of the fat can be brought about.

Ptosis of the abdominal organs in any marked degree.

Dermatitis, until this is cured by proper treatment.

II.—THE TYPE OF HERNIA.

1. *Inguinal Hernia.*—A largish inguinal hernia with feeble abdominal walls, and with much dilatation of inguinal apertures, is very unlikely to be "cured" by operation. It may be very definitely controlled by proper truss pressure, and this control will tend to cause the danger and discomfort of the hernia to diminish most appreciably. An operation then may place the patient in complete safety, and enable a light efficient truss to be worn with comfort so as to prevent recurrence.

An inguinal hernia which has recurred is very unlikely to be cured by operation, and a suitable truss is then advisable.

2. *Femoral Hernia.*—A femoral hernia of a large size is still more difficult of cure than an inguinal. It is well again to try to obtain control of it by truss, and subsequently to consider operation, with a view, not perhaps of cure, but of rendering the wearing of a proper truss efficient and safe.

A femoral hernia which has recurred is still more unlikely to be cured by operation, and a suitable truss is then advisable.

3. *Umbilical Hernia.*—(*a*) Infantile acquired: There is a great tendency for these small umbilical herniae in infants to become cured by natural means. Therefore operation is not necessary before, say, 5 years of age. (*b*) Adult acquired: When there is present a large umbilical hernia in an obese woman, the question of operation is a serious one. It must always be remembered that literally there may not be sufficient room within the abdominal cavity for the contents of the sac. Cure of such herniae by operation is most doubtful, but operation may make the condition such as to allow the wearing of a proper truss with comfort and safety.

4. *An Irreducible Hernia.*—There is no doubt that operation which allows of reduction of the contents of the hernial sac is ideal, but two points must always be very carefully considered: (i) Can all the contents find room within the abdomen? (ii) Will the operation permit of a truss being discarded?

From the foregoing remarks it will be seen that there are a number of conditions in which operation, to say the least, is not desirable. It is in these cases that a knowledge of the proper types of trusses becomes so very necessary.

THE ADVANTAGES OF THE HOSTEL.

SIR,—May I draw attention to several points of interest concerning the Hostel? It presents all the advantages of a club with few of its disadvantages.

1. No introduction beyond the presentation of a visiting card is required. This is of importance for Dominion men and women who arrive here unacquainted.

2. There is no entrance fee. This is a consideration for anyone spending perhaps only a week or two in London every few years and to those who can "drop in" only very occasionally.

3. Women practitioners may have access to all the discussions and rooms except the smoking room.

4. A doctor may bring his wife and family, and whilst not enjoying the privileges of the rooms reserved for members they can be at least under the same roof. A ladies' subcommittee will be formed at an early date to care for the interest of the family of a medical man, as it is realized what sacrifices they make when a doctor takes a "busman's holiday."

—I am, etc.,

August 27th. A. P. BERTWISTLE.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee thirty-five cases were considered and £388 10s. voted to twenty-five applicants. The following is a summary of some of the cases relieved.

L.R.C.P., aged 76, is unable to get engagement as locumtenent, although fit to undertake the work; his only income consists of the Epsom pension of £40 and Fund pension of £26 per annum. Special appeal made for help to meet arrears for rent. Committee voted £5. Total relief given by the Fund to March, 1925, £82; elected to an annuity of £26, January 1st, 1926.

Widow, aged 70, of L.S.A. who died in 1897. She has been in domestic service for fifteen years; a year ago she broke her wrist, but pluckily continued working; finally she had to give up and go into the infirmary, where she remained for some months. Recently a lady offered her a room rent free, but the applicant has to pay something towards her maintenance. The Fund voted £12 in twelve monthly instalments of £1 each, and an application has been made for the old age pension.

Daughter, aged 48, of M.R.C.S.Eng. who died in 1910. Her mother died eight months later. She started a small business which she was induced to sell so that she might live with and help some relatives, but was not strong enough to do the work and had to leave them. After various vicissitudes the Charity Organization Society found her starving in an underground room and gave her temporary help. The Fund was able to get her much-needed hospital treatment, but she is subject to asthma and bronchitis and is not sufficiently strong to undertake continuous work. It has been arranged for her to go to a convalescent home, and the Fund has voted her £25 in twelve monthly instalments. Previous relief amounted to £18.

Widow, aged 40, of L.R.C.P.Edin., who, when her husband died in 1923, was left with four children aged 8 to 18 with only £100 a year. A son aged 17 requires help for maintenance whilst studying. Voted £3 for three months. Previous grants for the same purpose total £29 10s.

Daughter, aged 27, of M.R.C.S.Eng. who died in 1907. She is confined to bed with heart disease and her only income is £1 a week, allowed by an aunt. As she requires constant attention a sister gave up a post in Canada to nurse her. The Fund voted £10.

Son, aged 15, of M.D. who died in 1922, was found living in undesirable surroundings. A place was found for him as a telephone boy, but he proved incapable. A suitable home has been found for him and arrangements made for private tuition, as his education was totally neglected by his parents. Fund voted £26 in four quarterly instalments towards his maintenance.

Widow, aged 60, of M.R.C.S.Eng. who died in 1908. She is dependent on daughter, aged 36, who teaches French in Paris. Mother and daughter live in one room. The applicant has been ill. The Fund voted £12 in twelve monthly instalments and a special grant of £5. Previous relief since 1913 amounted to £105.

Widow, aged 71, of M.R.C.S.Eng. who died in 1913. She has a small cottage outside London and supplements her income of £30 a year by letting, from which she has received £41 during the last twelve months. With a friend's help (£20) she has been able to pay her way, but asks for assistance for repairs as the rooms are in a bad condition for letting. Voted £15. Previous relief since 1916 amounts to £26.

Daughter, aged 76, of M.R.C.S. who was in the R.A.M.C. and died in 1891. A condition of residence in a home is an income of £40 a year, and the applicant received only £32 a year from the War Office. The Fund voted £20 in four quarterly instalments. Previous relief since 1921 amounts to £70.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

speakers described the day-dream or reverie as one of the methods by which workers neutralize the monotony of repetitive work, though this method of relief carries with it dangers of its own. Dr. Beadles uttered a word of warning on the propensity of some welfare workers to follow workers to their homes; and Dr. Robb reminded the investigator that the worker was suspicious of observations with a stop-watch. Almost all the speakers ended what they had to say by emphasizing the necessity for vocational selection.

Vocational selection may no doubt be regarded as preventive treatment for the disease. Unfortunately it was not considered sufficiently germane to the subject under discussion for the speakers to elaborate their views on the matter. It is perhaps a little curious that people who have had free choice in the selection of their profession—unless perchance they were driven to it by a hard, old-fashioned father—should be found unanimous in advocating outside selection for the children of labour. The free and independent child of the "classes" is allowed to select his vocation, and to kill himself in carrying it out if he chooses. The child of the "masses" is only to exercise his choice within limitations to be dictated by someone else—the speakers did not say whom. It is clear that a youth is entitled to his predilections. It is equally clear that an employer need not employ a youth whom he considers unfit for the job. But we have a lurking suspicion that the welfare worker and the investigator are after something more. Some are avowedly in favour of a scheme to employ experts to examine aspirants in each trade. Speculation on the intentions of those who advocate vocational selection is interesting, because vocational selection is one of the tenets of the communistic state.

There were two minor points of interest in the discussion. As Dr. Brackenbury pointed out, nearly everyone who took part in it spoke in terms of the female sex. Apparently the patient male beast of burden would never have thought of complaining of monotony. It was the introduction, presumably, of large quantities of female labour into factories that led to the discovery of the monotony of repetitive processes. The other point of interest was Major Knowles's passing reference—with which we sympathize—to the monotony of the life of the housewife, who has been unable to organize her home and reduce her hours by the introduction of simple repetitive processes.

The whole discussion undoubtedly demonstrated the value of the Section of Medical Sociology, even though we agree with Major Knowles that we should be slow in our judgement of these problems, and, above all, be moderate in our statements.

THE INSECT VECTOR OF DENGUE.

THE combined issue of the first two numbers of the *Philippine Journal of Science* for 1926 is devoted to a monographic report on *Dengue*[1] which is of great interest to all engaged in tropical medicine. The whole is characterized by thoroughness and careful attention to detail, and, although the investigators have not succeeded in isolating the causative agent of this disease, the work commands respect for the great service it renders in confirming certain points which were only probable and clearing up certain others which rested on a doubtful foundation.

They have proved definitely that dengue is a mosquito-borne disease, that the vector (in Manila at all events, and probably elsewhere) is *Aëdes aegypti* (*Stegomyia fasciata* as it used to be called), thus confirming the work of Cleland, Bradley, and McDonald in Australia, and that *Culex quinquefasciatus* (*C. fatigans* of old) is not the transmitter. They have thus shown that Graham was correct in his surmise that the disease was transmitted by a mosquito, but wrong in incriminating Culex. They have demonstrated that Graham's "dengue parasite," the *Haemamoeba denguii*, is probably an artefact, as they found the same appearances in normal blood, examination of which had apparently been omitted—another instance of the danger of neglecting controls.

As the result of experiments ingeniously planned and carefully performed the investigators have determined the conditions under which a dengue patient may infect the mosquito. This can happen during a period from a few hours before the first symptoms appear to the end of the second day of the disease, and possibly, though with less certainty, for another twenty-four hours or so, after which mosquito infection fails. They have determined also the conditions under which an infected mosquito may again transmit the disease to man—namely, after the lapse of a period of ten to eleven days, the vector being not a mere mechanical transmitter. No animal other than man has been found susceptible, so there is no evidence of any reservoir host in nature.

For the purposes of experiment and for making accurate clinical observations 64 volunteers were obtained who were perfectly healthy, had resided in the tropics for a brief period only, had never been in a dengue fever district, and had no record of any illness suggestive of this disease. Of this number 52 were infected experimentally by *Aëdes* which ten to eleven days previously had bitten a dengue patient in the prodromal period or the first two to three days of illness. No experiments with Culex succeeded in producing infection. Clinical observations showed that the time of incubation in 61 per cent. was four to six days, and in 89 per cent. was four to seven days; very exceptionally it was as long as ten days. The symptoms varied much in their severity; some cases were so mild that had not the diagnosis been confirmed by experimental transmission from them it would have been in considerable doubt. It was also found that the onset was less abrupt than is generally believed, as prodromal symptoms were observed for six to forty-eight hours before the initial rise of temperature. In rare instances patients were afebrile throughout the illness; they may constitute a serious factor in the spread of an epidemic.

The authors' deductions as regards immunity are of importance. Of newcomers to Manila from the United States under military conditions about 40 per cent. are attacked during their first year; of these some 30 per cent. may expect a second, and a few a third and even fourth attack. The "acclimatization fever," known locally as *chapetonada*, is dengue. The degree of immunity resulting from an attack is decidedly individual in character, and is rarely solid and lasting. Many went through the succeeding epidemic season without being attacked, but others had relapses or repeated attacks, tending, however, to diminish in severity. The immunity exhibited by native children is probably due to a first attack in early life and constant reinforcement by frequent bites of infected mosquitos.

The points of similarity between dengue and yellow fever are well brought out. For example, that the

[1] *Dengue: Its History, Epidemiology, Mechanism of Transmission, Etiology, Clinical Manifestations, Immunity, and Prevention.* By J. F. Siler, Milton W. Hall, and A. Parker Hitchens. *Philippine Journal of Science*, January-February, 1926, Vol. 29, Nos. 1-2.

British Medical Journal.

SATURDAY, SEPTEMBER 11TH, 1926.

MONOTONY.

IN the Section of Medical Sociology at Nottingham, of which the full report appears in this issue, one fact was brought out very clearly—namely, that it behoves the sociologist, no less than every other variety of philosopher, to be most careful in the definition and use of his terms. At the morning session the subject was the physical and mental effects of the monotony factor in modern industrial work; and it was plain that every speaker felt it necessary to apologize for, or to explain, the use of the word "monotony." The opener of the discussion, Mr. Hudson Davies of the National Institute of Industrial Psychology, gave a choice of meanings, quoting Munsterberg's, that monotony is a subjective dislike of uniformity, and Myers's, that monotony is a danger signal of central nervous exhaustion. He himself defined monotony as a reaction, not to selected features of work, but to the whole circumstances of its performance. Miss May Smith, of the Industrial Fatigue Research Board, called attention to the etymological meaning, "one tone," and said that the word represented absence of stimulation. Major Knowles, of Boots' Welfare Centre, asked whether, not being a fisherman, he was entitled to tell a friend sitting on a river bank hour after hour that his occupation was monotonous. Miss Slocock, an inspector of factories, thought that there was no such thing as monotonous work; monotony was a reaction of certain human beings to certain work carried on under certain conditions. Professor Winifred Cullis gave her opinion as a physiologist that the word "monotony" now definitely carried with it more or less of descriptive colour, that a job was monotonous when the general effect was unpleasant, and that monotony connoted an unpleasurable reaction to repetition.

It will be observed that through all these definitions there runs a similarity of idea, and a recognition that a simple word meaning a single musical tone has now received a descriptive colour or a subjective attribute of unpleasantness. It quickly appeared, however, during the discussion, that this descriptive colouring could not be applied to any occupation as such. An occupation that appeared monotonous to one person might be full of interest to another. The besetting sin of the investigator, as Miss May Smith said, is that he puts himself in imagination in the place of the worker, and then judges the work from what he imagines would be its effect on him. It is here that we reach the point at which ill defined terms become a danger. The girl who has hitherto been quite content to stick labels on bottles suddenly learns that she is engaged in a monotonous occupation. Probably she has often heard the word "monotony" used in common parlance without attaching any meaning to it other than boredom. She now learns that monotonous work has physical and mental effects. She begins to feel that her work is monotonous, and through the influence of suggestion spreads the feeling through her group. As Major Knowles said, "to arouse artificial discontent by constantly suggesting that the work is injurious is a futile thing to do." Nothing is easier, said Miss Dowding, than for a discontented worker to turn a pleasurable job into monotonous drudgery for a whole group of workers.

It would appear that most of those who took part in the discussion attached the factor of monotony to what is called repetitive work. The terms are not synonymous: to make repetitive work monotonous involves not only questions of the frequency and duration of the repetitions, but also the personal equation of the worker. It is possible, however, that until the matter has been more fully investigated it would be better to speak of repetitive work rather than of monotonous work. For it would appear that what the investigators are really concerned with is a disease (or a group of symptoms) called monotony which affects some people who are engaged on repetitive work. Doubtless this adds a further meaning to an ill defined word. Some of the speakers showed a preference to call the disease "boredom."

As regards the etiology of the disease, it seems quite clear that there is a predisposing cause in the temperament of the worker. Mr. Hudson Davies seems to think that the predisposition is universal; he described the oarsman training for a boat race as becoming bored with training, though he never notices the monotony involved in rowing the race. Mr. Davies also alleged that intelligence is a predisposing cause, and also education. Amongst exciting causes is the subdivision of labour, so that the worker sees only a small portion of the work, and never the finished article. Miss Slocock called this the absence of "creative" aspect in the work. In some cases, she said, too long and continuous use of a special sense causes monotony, and she told a story of a girl who had to smell every egg that went to the making of biscuits in a factory. It was impossible to do this for more than an hour at a time. Dr. Murrell thought that compulsion produced monotony. Another speaker ascribed it to competition. It was admitted during the discussion that the shortened working day and lessened number of hours a week had largely mitigated the effects of repetitive work.

The symptoms of the disease vary. In one case a worker may become a bad timekeeper, seize every opportunity for leaving work, and become as unsatisfactory as possible without losing her job. Another develops sensations of tiredness, and complains of pain in the eyes, head, or stomach. A third will gradually lose interest in her work until she develops a "nervous breakdown." Some will develop psycho-neurotic symptoms of a serious nature.

On the proper method of treatment opinion appeared to be largely agreed, as was natural in a body of speakers many of whom were concerned in welfare work. There should be reasonable hours of work, with rest pauses when necessary; the environment should be cheerful; singing and conversation should be encouraged where possible; talks about the finished product should be given; supervisors should be chosen carefully in order that there may be no "nagging"; interests and recreations outside working hours should be encouraged. There was a difference of opinion, however, on some of the suggestions made. Some speakers thought that change of work was useful. Others were decidedly of opinion that change was often resented. Mr. Hudson Davies thought it necessary that the balance should be held between too much change, which was irritating, and too little, which was monotonous. Anyhow, it seemed quite certain that many girls took an interest in their monotonous work, and would resent the jolt to their habits involved in changing to and learning a different process. Several

definitions in the case of the first three classes require that the mental defectiveness must have existed "from birth or from an early age," and in the last class that the particular conduct they manifest must have been displayed "from an early age." For some years these definitions have been found to have important administrative disadvantages in at any rate two respects. In the first place, magistrates, in order that they may deal properly and legally with persons before them, have required evidence that the undoubted present mental defectiveness of those persons had existed "from birth or from an early age," and such evidence it has naturally in some cases been difficult or impossible to produce, although the nature of the case might not be seriously disputed, or might, indeed, be convincingly evident to any medical or psychological expert. In the second place, an increasing prevalence of encephalitis lethargica has led to a considerable number of cases in which a very real arrested development of mind has arisen in the course of childhood or adolescence, therefore, of course, not inherent or germinal or congenital, but definitely acquired. It is very desirable that there should be power for authorities to deal appropriately with cases of this nature. The new bill proposes to remedy these defects, or to effect these purposes, by eliminating the words "from birth or from an early age" from the old definitions of the classes of defectives, and to add that for the purposes of the Act mental defectiveness shall mean "a condition of arrested or incomplete development of mind whether innate or induced after birth by disease, injury or other cause." The new definitions, in what is now probably their final form, may be regarded as satisfactory, but they have not reached that final form without a good deal of thought and trouble on the part of the Board of Control, the Medical Committee and Council of the Central Association for Mental Welfare, and others interested. From the medical aspect the danger has been lest the new definitions should lead to the ignoring in practice of the fundamental distinction between the arrest of mind taking place before the developmental period is ended, and a perversion or decay of mind occurring after the mind has attained normal development, and so include, in fact, cases of insanity which were never intended to be, and should not be, dealt with under the Mental Deficiency Acts. This distinction does not need emphasizing to medical practitioners, but to some others who have to take an important part in administering or enforcing the law it seems necessary to insist upon it. It is unfortunate, therefore, that the words "arrested or incomplete development of mind," occurring towards the end of Clause 1 of the bill, are not stressed in the explanatory memorandum prefixed thereto, as they should have been, but are rather slurred over and have their meaning obscured or weakened in the first paragraph of that memorandum. It is true that the preface is no part of the bill, but it is what many people read instead of the bill itself, and it is of some importance that the meaning should be made clear and the emphasis properly placed when the bill next comes before the House of Commons, so that there shall be no misunderstanding as to its application and administration.

THE NEW INTERNATIONAL SANITARY CONVENTION.

IN July last Sir George Buchanan read an address before the conference of port sanitary authorities, at the Jubilee and London Congress of the Royal Sanitary Institute, on the recent revision, at the conference held at the Office International d'Hygiène Publique in Paris, of the International Sanitary Convention for dealing with the chief "pestilential" diseases which are liable to be carried by shipping. The chief diseases were cholera, plague, typhus, small-pox, and yellow fever; and Sir George Buchanan pointed out that British influence in framing regulations had been exerted uniformly on the side of freedom. All systems which involved long detention in quarantine had been contested; in regard to cholera the application of the authorized conventions had been proved to be consistent with a minimum of interference with passengers and crews, and practically no interference at all with merchandise. The carriage of plague infection by ships required different measures from those adopted against the carriage of cholera. Human plague cases, whether on ships or on the shore, were quite an uncertain factor; ports became infected one after the other through the carriage of plague rats. It was necessary, therefore, to suppress rat plague on ships, to prevent the access of rats from ship to shore, and to keep down the rat population in wharves, docks, and warehouses. The methods adopted were systematic rat-catching, fumigation with sulphur or with cyanide gases, rat guards to prevent landing, and various schemes for dealing with the discharge of cargo likely to harbour rats. The International Sanitary Convention of 1912 provided some measures of co-ordination, but there were obvious deficiencies, one of the worst being that a ship which swarmed with plague rats would be classified as "healthy" and not as "infected" if no human cases had occurred during the voyage. Sir George Buchanan said that yellow fever had been diminished almost to the point of extinction by quarantine in its newer sense of restrictive measures scientifically applied. Typhus and small-pox had required measures subject to some general rule, so as to avoid friction and dispute between different nations. In preparing the new convention one of the first points concerned the arrangements between different countries to inform each other of the prevalence of the disease. The Office International endeavoured to get rid, as far as possible, of provisions based on formal declarations that a particular port had been infected, and to increase the means by which countries might obtain information of the prevalence of the diseases from any part of the world—for example, through the consular services and the Health Organization of the League of Nations. The new convention required the signatory Governments to reply to any inquiry addressed to them by the Office International d'Hygiène Publique in Paris for information about the transmission of infectious disease from one country to another. The convention also improved and simplified the declaration which Governments are required to make by means of their consular services, and imposed a new requirement that these occurrences should be notified direct to the Office International, which would decide on the methods of distributing knowledge of the facts. With regard to rats, the conference adopted a system by which each country should undertake to do its best to ascertain the conditions of rats in its ports, and to communicate the results to the central office in Paris. The convention, therefore, aimed at supplying responsible authorities in each country with the fullest possible information, leaving the countries to decide what action, if any, was necessary. It also laid down a code of measures which were applicable to the ship, passengers, and crew, and this code had been made strictly reasonable, and the measures suggested constituted a maximum. No obligation had been imposed on any Government to take the measures prescribed in the code. An important article in the convention recommended the conclusion of special agreements between individual countries to make the sanitary measures "more efficacious and less burdensome," and to encourage preventive action, such as vaccination, at the port of departure. After considerable criticism of the use of bills of health, the conference recommended that such bills should be issued free, that fees for consular visas should be reduced, that the bills should be set out in one of the languages recognized in maritime commerce, and that the gradual abolition of bills of health should be aimed at. A separate code had

patient is infective only up to the third day of illness; that there is a period of development of the virus in the mosquito of the same duration before it is able to infect another human subject; that the virus, which is still to seek, is, at one stage at least, filterable, present in the peripheral blood of the patient, and transmissible to non-immunes by the blood or filtrate; that epidemics only arise when there are simultaneously present cases of the disease, large numbers of *Aëdes aegypti*, and large numbers of non-immune individuals. On the other hand, the mortality from dengue is *nil*, and the degree of immunity weak and variable, both of which points are the direct converse of what obtains in yellow fever. Prevention is summed up in antimosquito measures and the co-operative efforts of individuals, healthy and sick.

There are other points in the report of much interest—such as the history of the condition, details of the arrangements for breeding and storing mosquitos, special points in the bionomics of the insect, the epidemiology of the disease in the Philippines, which space alone forbids our dealing with here. The report is clearly written and well produced, and misprints are very few, the most noticeable being that Sir Rubert Boyce is named Rupert throughout, a point which does not detract from the scientific value of this excellent record.

JONATHAN HUTCHINSON'S MUSEUM.

THE new buildings of the educational museum were opened at Haslemere on August 27th by the Earl of Midleton. The museum was founded thirty years ago by Sir Jonathan Hutchinson, who not only made many gifts to it, but also applied certain ideas of his own in the matter of arrangement which were then considered revolutionary, and even yet have not found general appreciation. Since his death, up to which time he defrayed the whole cost of maintenance, including the services of a curator, the work has been continued by voluntary contributions, and last year it was decided to acquire more permanent and central quarters as a memorial to the founder. A house and grounds were purchased, and were adapted to museum purposes by one of Sir Jonathan Hutchinson's grandsons, and in this new setting—much more suitable than the series of huts in which the specimens had previously been lodged—the collections are seen to advantage. The museum contains sections on geology, botany, natural history, and the history of mankind, as well as a local exhibit to which it is the pride of the people round about to contribute. Lately the museum has been enriched by the gift of a section illustrating peasant art, the nucleus of which was formed twenty years ago by the Rev. Gerald Davies, now Master of Charterhouse, who gathered articles, such as mangle-boards and other domestic implements, as well as textiles, mostly in the remoter parts of Scandinavian countries. An excellent ornithological collection has been rearranged to illustrate, not only what some birds are like, but their migrations and life-histories and economic value. The governing principle of the museum is still Hutchinsonian simplicity and unpretentiousness, and the interpretation of science in a direct, pictorial, and diagrammatic way. One of Sir Jonathan Hutchinson's ideas, carried out on a large scale, is his "space for time" method, whereby the walls are arranged in vertical panellings, each panel representing, in the historical section, a century, and in the geological section a period; exhibits—pictures, printed information, or specimens—are arranged in the appropriate spaces. The ceremony at the opening of the new buildings was presided over by Dr. Arnold Lyndon, O.B.E., chairman of the committee of management, who recited briefly the particulars just given, and drew attention to some of the outstanding exhibits. Lord Midleton said that Jonathan Hutchinson was a great surgeon, naturalist, and investigator, but those who knew him best would perhaps think of him first as an educationalist in the sense that he wanted to bring to every community in its own locality the results of scientific research, and to do so in the most simple and direct way. A visitor to an ordinary museum might often plaintively ask what, humanly speaking, a particular specimen was, but under Sir Jonathan Hutchinson's guidance a museum became not only human but exciting. An address on Hutchinsonian method was given by Dr. F. A. Bather, F.R.S., keeper of the geological department of the South Kensington Natural History Museum, who said that Sir Jonathan Hutchinson was accustomed to set his educational museum rather in contrast to the ordinary local museum, though possibly a synthesis of the two might prove the most advantageous. Hutchinson's idea was that the museum should be for the untaught. He also dissented from the view that the museum should be a mere addition to book knowledge; it was to be a compromise between the printed book and that outside nature study opportunity for which it was so difficult for an urbanized community to obtain. Hutchinson taught through concrete objects; to his mind no museum worthy of the name was simply a "series of labels illustrated by specimens"; it was to be a series of specimens which as far as possible told their own story. Another point on which this master in museum making insisted was that objects as far as possible should not have to be viewed through glass. If the injunction "not to touch" could be waived so much the better. Things were best seen when the fingers assisted the eyes. Hutchinson also followed the plan of first asking his questions of his students and then turning them loose among the material to gather their answers—a better plan, Dr. Bather thought, and one worthy of extension into larger fields, than the usual method of taking students through a course of study and putting the questions at the end. A vote of thanks was proposed by Mr. H. A. L. Fisher, lately Minister of Education, who, however, declined to be drawn into a tempting discussion, and was seconded by Dr. Roger Hutchinson (Haslemere), who remarked that when his father started his museum his ten irreverent children thought it was a device for forcing more knowledge down their unwilling throats. His father was devoted to the demonstration method; if he shot a rabbit in the field he would immediately open the animal and demonstrate its anatomy to his sons, or he would pluck a flower to pieces the while he talked about stamen and pistil. A primrose by the river's brim meant to Hutchinson far-reaching Darwinian theories and much else. On behalf of the family he expressed gratitude for this living memorial in which another soul went "marching on." At the close of the proceedings a memorial tablet commemorating Hutchinson's great work among his Surrey neighbours was unveiled.

THE DEFINITION OF MENTAL DEFICIENCY.

A NEW Mental Deficiency Bill has been passed by the House of Lords, and was ordered by the House of Commons to be printed on July 29th last. It will be considered by the latter House in the autumn session. The main purpose of the bill is to alter the definitions of defectives as set out in the Mental Deficiency Act, 1913. It is a curious fact that neither in that Act nor in any other is there any definition of mental defectiveness; there are only definitions of the several classes of defective persons—idiots, imbeciles, feeble-minded persons and moral defectives, or "moral imbeciles," as they have hitherto been termed. The

INFANT WELFARE.

MUCH work has been done and much has been written in recent years on the determining causes of infant mortality. Special interest nevertheless attaches to a contribution to the subject by Miss E. M. Elderton of the Galton Laboratory in a memoir on the relative value of the factors which influence infant welfare.[1] The first section of the memoir and part of the second were published last year, and were reviewed on January 9th (p. 59); the remainder of the second section has now appeared, and further sections are to be issued later. Miss Elderton is a recognized authority on the application of modern statistical analytical methods to problems bearing on the relative importance of the influence of heredity and the various environmental and social factors in determining types of disease, and has made so detailed an analysis of the various factors that her conclusions must be of considerable general interest and of much value to those who have to deal practically with infant welfare. The data on which the investigation is based were derived mainly from the five North Country towns, Blackburn, Preston, Salford, Rochdale, and Bradford, and were provided by the respective medical officers of health. In Blackburn, Preston, and Salford the information relates to babies who were born in 1908; in Rochdale to those born in 1909 and 1910; and in Bradford to those born in 1911 and 1912. The number of infants comprised 500 from Blackburn, 633 from Preston, 854 from Salford, 4,006 from Rochdale, and 2,931 from Bradford. All the particulars were obtained by lady inspectors or health visitors. Some data relating to the city of Birmingham in 1908 derived from a report by Sir John Robertson, and data for the district of Westminster, London, from reports of the City of Westminster Health Society, were also considered. The baby who had been under observation for a year was the centre of investigation. As the problem for solution was the arrangement in order of importance of the factors that influence the infant death rate and the health of the surviving children, the method of correlation was employed for the analysis, and the correlation coefficient was used in its various forms—the product moment, the biserial, and the fourfold. Partial correlations also were used to distinguish the influence of certain interrelated factors. The death rates per 1,000 births for the various comparable groups were also tabulated. The first section of the memoir deals with the influence of various environmental and parental factors on the viability of the child. The term "viability" is used in preference to "mortality," as the latter word has more the idea of a rate behind it. The principal conclusions are that the health of the mother is an important factor in determining infant mortality in the data examined, and that the habits of the parents and the occupation of the father both show a small association with infant mortality. Both the health and habits of the parents are associated with the various environmental conditions considered, and allowance must be made for parental health before any statement can be made as to the relative importance of the environmental conditions for infant viability. When this correction has been made very little association is found between infant mortality and any environmental condition. Any association that exists between the employment of the mother and infant mortality is very slight; in the majority of districts there is none. When any association is present it is chiefly a secondary result of the presence of inferior stock, and the correlation is made insignificant by retaining the habits of the parents constant. There is no evidence that the employment of the mother, in itself, leads to lack of cleanliness in the home. There is a rather higher infant death rate among first-born than among later-born children, but later-born children in larger families do not show less vitality. If any such tendency exists it may be ascribed to the fact that the parents have bad habits. Evidence of the influence of the age of the mother is conflicting; there is a heavier death rate in infants of mothers under 23 years except in Bradford, but more data are required. No evidence is found that bottle-feeding in itself causes a high infant mortality. In the majority of cases bottle-feeding follows poor health in the child, and does not cause it. It is held, however, that this subject calls for fuller consideration. Poverty, whether judged by the wage of the man or the income of the family, was not found to be associated with infant mortality except to a slight extent, and this association disappears when the health of the mother is made constant. It appeared that the type of housing has very little influence on infant mortality, and that indoor sanitation had no advantage over outdoor sanitation so far as infant mortality was concerned. Miss Elderton urges the need for more complete statistics of the factors that have an influence on infant welfare, particularly as to the health of the parents, and to the attack rate of certain diseases in infancy; she asks also for some method which would make it possible to identify on entrance to school, for the purpose of further inquiry in regard to health and social conditions, the children whose circumstances have been the subject of investigation in infancy.

[1] On the Relative Value of the Factors which Influence Infant Welfare. By Ethel M. Elderton. *Annals of Eugenics*, vol. i, Parts III and IV, April, 1926, pp. 277-381. Cambridge: The University Press. (Med. 4to; Illustrated. Annual subscription, 50s. net; double parts, 35s. net.)

PLAYING GROUNDS FOR THE PEOPLE.

IN these days when vast areas in the vicinity of all large towns are being converted into residential neighbourhoods for various classes of the population, it is well that there should exist such an organization as the National Playing Fields Association. The movement was inaugurated at a meeting in the Royal Albert Hall on July 8th, 1925, under the presidency of the Duke of York. In town planning the provision of open spaces for recreation has often been overlooked; and it has been urged that the Ministry of Health should give closer attention to the matter, and co-operate with local authorities in establishing playing fields in places where extensive building is going on. In the meantime the National Playing Fields Association is endeavouring to support local authorities and other bodies in any steps they take to provide the people with adequate recreation grounds. It advocates an extension, with such variations as may be necessary, of the scheme started in Oxford in 1920 by Mr. J. R. F. Turner, whereby boys of the elementary schools are permitted to use college cricket grounds when these are not required by the undergraduates. Certain public schools have offered similar facilities and practice classes have been instituted at Lord's. The object of the association seems worthy of every support, not only in neighbourhoods that are being suburbanized or developed into towns, but also in many villages throughout the country where playing grounds seem sadly lacking. The address of the National Playing Fields Association, which is now being organized on a county basis, is 166, Piccadilly, W.1.

THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS.

AT the request of the Registrar of the General Medical Council we publish in the SUPPLEMENT this week a list of the names of medical practitioners who have not replied to his inquiries as to the accuracy of their postal addresses. Any practitioner who finds his or her name included in this list and desires it to be retained on the *Medical Register* should communicate at once with the Registrar, General Medical Council, 44, Hallam Street, Portland Place, London, W.1.

been made for "infected," "suspected," and "healthy" ships according to each disease in question. Provision had been made for protective cholera inoculation. The full inspection of ships for rat plague was authorized; where the ship was "healthy" and there was no evidence of rat plague or unusual mortality amongst rats, fumigation was not entirely forbidden, but was only to be undertaken in exceptional cases and for good reasons. Particular ports were to be designated as sufficiently equipped to undertake effective destruction of rats, the process would be undertaken not more often than once in six months, and a certificate that it had been done, specifying the methods and results, would carry the ship on to the next half-yearly examination. The inspection officer was authorized to exempt from "deratization" when circumstances permitted, and the exemption certificate had the same six months' validity as the "deratizing" certificate. In conclusion, Sir George Buchanan said that while the new convention was not a world-shaking instrument of hygiene, it embodied a practical world code which should assist administration, and at the same time furnish a reasonable protection to the freedom of commerce and transit.

SIR HENRY ACLAND.

IN the *Times* of September 4th appeared an announcement of the gift to the Bodleian Library of the correspondence of that great personality the late Sir Henry Wentworth Acland, Bt., K.C.B., M.D., F.R.S. (1815-1900), of Oxford, who, finding medical science in the "home for lost causes" in a state of suspended animation in the early and mid-Victorian periods, brought it to life by his vigour and far-seeing wisdom. Coming of an old Devonshire family, the fourth son of the tenth baronet (creation 1678, with precedency from 1644) of Columb-John, he was created a baronet in 1890, was President of the General Medical Council for thirteen years (1874-87), and Regius Professor of Medicine at Oxford for thirty-six years (1858-94). He was a most striking figure, and, like his friend Henry Liddell, the great dean of Christ Church, combined handsome impressive features with the highest intellectual culture in a way seldom rivalled. An artist and lifelong friend of John Ruskin, it was indeed fortunate for Oxford that he directed the building of the University Museum; this interesting story has been told more than once—by Ruskin and himself in 1859, by Dr. H. M. Vernon and his wife on the jubilee of the museum (1909), and by Sir Henry's son Dr. Theodore Acland in the "Contributions to Medical and Biological Research, dedicated to Sir William Osler in Honour of his Seventieth Birthday" (1919), in which there are most appropriately portraits of Sir Henry Acland and John Ruskin. His wide sympathies, versatility, and personal influence did a unique service in promoting the study of natural science in Oxford. Looking back on Sir Henry's plans in the eighties for medical education and the developments of public health and State medicine, we discern now a marvellous foresight and accuracy which then may have appeared visionary. His correspondence of six thousand letters should be a mine of information about the history of the science and medical school of the University of Oxford, and show even more clearly what a great man he was.

A CONFERENCE ON CANCER.

A CONFERENCE on cancer is to be held at Lake Mohonk, New York State, on September 20th, by the invitation of the American Society for the Control of Cancer. The conference will last for the greater part of a week. Its main purpose is to ascertain what measure of agreement on the various problems of cancer in which the public are interested can be reached by discussions between pathologists and clinicians of America and European countries. The representatives from this country are Sir John Bland-Sutton, Past President of the Royal College of Surgeons of England, Dr. J. A. Murray, director of the Imperial Cancer Research Fund, Dr. Archibald Leitch, director of the Cancer Hospital Research Institute, and Mr. Sampson Handley, surgeon to the Middlesex Hospital. In addition to these there will be about a dozen delegates from various European countries, including Professor W. M. de Vries (Amsterdam), Professor H. T. Deelman (Gröningen), Professor Gustave Roussy, Dr. C. Regaud, Professor Hartmann (Paris), Professor Bérard (Lyons), Professor Marie (Toulouse), Dr. C. du Bois (Switzerland), Professor Maisin (Louvain), and Dr. R. Bierich (Hamburg).

PRE-MEDICAL INSTRUCTION IN AMERICA.

WE welcome the first number (July, 1926) of a new series of the quarterly *Bulletin of the Association of American Medical Colleges*, stated to be "the only publication in the world devoted to medical education and medical pedagogy." It has been resuscitated after an interval of thirteen years, for the first series was brought to a close by financial stress after two years' existence. Besides much news, it contains the views of educational authorities, such as deans of the medical schools; in this instalment there are expressions of opinion on the two years of pre-medical study which, though of course presented from the American standpoint, may not be devoid of interest in this country, and even, perhaps, capable of some degree of application. Some of the teachers feel that too much attention is given in these two years to scientific subjects to the neglect of the humanities, and that there is therefore a risk of excluding from the medical schools those students with the broader human interests and knowledge of the forces governing behaviour. Samuel P. Capen, Chancellor of the University of Buffalo, asks the familiar questions: (1) Which is the more important for the medical student, a thorough grounding in the basic sciences or a wider general education? and (2) Is it possible to improve the accomplishments in the natural sciences and at the same time to provide a broader and better education in other directions? He is in favour of curtailing the scientific preparation and making it more attractive to the student, who often fails to see its object, except as a disagreeable preliminary penalty which must be paid for the privilege of studying medicine; to achieve this he would introduce into it illustrations from material now reserved for the medical school. A considerable amount of the social sciences, especially sociology, psychology, economics, and history, should, he thinks, be added to the curriculum of the two years spent in pre-medical study. Professor Hugh Cabot, Dean of the Medical School of the University of Michigan, while inclined to think that more scientific work, such as physical chemistry and biophysics, should be taught, and that the instruction in English and rhetoric should, if anything, be increased, expresses a doubt whether, apart from culture, the learning of French and German adds anything essential to the equipment of the medical man, since the greater extent to which foreign literature is available through translations has altered the situation to an important degree in recent years. It appears that at Michigan University, at any rate, this bold and rather striking conclusion has been arrived at; no doubt the abandonment of the widely held ideal of a knowledge of these two modern languages has been reached only after due consideration and the realization that in practice the student is seldom able to read freely the language he takes up for admission, and as he rarely uses the knowledge the time thus expended has really been lost.

how to live healthily and a right use of measures of prophylaxis and treatment. He adds:

"Every form of industrial or mechanical contrivance which either prevents or reduces pollution of the atmosphere is a contribution to the public health, and this aspect of the problem calls for the continued and vigilant attention both of authorities and those responsible for commercial concerns. But this is not all. There is needed an increase in the knowledge and practice of healthy living. Much can be done by personal prudence, by cleanliness, by exercise, by correct breathing, by domestic ventilation, and by the practice of individual hygiene."

With reference to the part played by respiratory infection, Sir George Newman recommends regular bacteriological examinations of samples of the population in different places, and thinks that in this way it will be possible to forecast epidemics of respiratory disease, as has been accomplished in the case of cerebro-spinal fever. He does not believe that any form of treatment by drugs or vaccines is at present generally applicable, though in all acute respiratory infections early medical treatment and competent nursing are of supreme importance. Such treatment consists of rest, the maintenance of the patient's strength, the appropriate oxygenation of his blood, and the sustenance of his circulation. He considers that at present the effective provision of hospital accommodation for respiratory infections is proportionately inadequate, and suggests that treatment in isolation hospitals might well be extended to include that of respiratory diseases. He closes this section of his report with the following words:

"Lastly there is need for much more intensive study of pneumonia. Medically, we want more knowledge of its bacteriology, modes of transmission, relation to primary and antecedent disease—fatigue, colds, influenza, measles, whooping-cough, trauma, alcoholism, heart disease, diabetes, and renal disease. Socially, too, there is need for exact investigation of the depressant influences and circumstances which predispose to pneumonia."

Small-pox.

Small-pox continues to increase; 5,365 cases were notified in 1925, as compared with 3,765 in 1924, 2,485 in 1923, 973 in 1922, and 315 in 1921. In addition to these 5,365 cases local inquiries resulted in the discovery of fifteen other cases, but twenty-six of the notified cases were not confirmed as being small-pox by the Ministry's officers or the medical superintendents of small-pox hospitals, so that the net total number of cases which came under observation during 1925 was 5,354. Six patients died. Sir George Newman refers regretfully to the misunderstanding and misrepresentation which have resulted in the confusing in the lay mind of the medical question of the merits of vaccination with the administrative question of its compulsory application. An unfortunate sequel has been that the concession granted in 1907 by Parliament to the natural repugnance to compulsion has been misinterpreted as a weakening of professional belief in the efficacy of vaccination, which, nevertheless, in the opinion of those best qualified to judge, remains the one and only certain protection against the spread of small-pox. The general distribution of the disease in counties resembled that in 1924, but there were 1,138 cases in Durham as compared with twenty in the previous year. Control of the disease in that county was rendered difficult by inadequacy in the provision of hospital beds in certain of the invaded districts. The spread of the disease was facilitated by the consequent inevitable delay in removing the patients from their homes, and by the unvaccinated condition of the large proportion of the population. An instance is given of one district in which all the ordinary measures for limiting the spread of the disease were neglected for a long time, with the result that the infection became widespread in eight adjoining districts.

During the year under review small-pox remained mild in type with a low mortality. A few patients became acutely ill before the eruption appeared, delirium being occasionally reported. Instances of grave constitutional disturbance during the second week of the illness were recorded, and in some cases involvement of the eye resulted in permanent impairment of vision. Sir George Newman repeats the conclusion in his previous report to the effect that the present mild epidemic is indistinguishable from small-pox in respect of its clinical character, the protection afforded by vaccination, its biological reaction, and the potential power of the virus. No vaccinated infants or young children were attacked, although in the days before infantile vaccination small-pox was in the main a disease of childhood. Of 925 cases of small-pox occurring in vaccinated individuals only nine patients had been vaccinated after infancy, and in these nine cases the lapse of time between vaccination and infection was between ten and sixty years. Sir George Newman quotes in this connexion the finding of the final report of the Royal Commission on Vaccination, that immunity could not be assured beyond nine or ten years. In contrast with these figures it is to be noted that a large proportion of the unvaccinated patients were children. Reference is made to the appointment in February of a departmental committee in conjunction with the Medical Research Council with reference to the standardization of vaccine lymph and the improvement of vaccination (BRITISH MEDICAL JOURNAL, February 13th, 1926, p. 294). As a result of the Therapeutic Substances Act, 1925, establishments for the preparation of vaccine lymph will have to be licensed, and the importation of lymph prepared in foreign countries will require to be controlled. The committee will therefore have to advise on the standard requirements and tests to be imposed, and it will also consider whether in certain circumstances advantages could be secured by varying the methods of vaccination—for example, in order to provide temporary immunity during outbreaks of small-pox.

(To be continued.)

Australia.

QUARANTINE PRACTICE.

THE Department of Health of the Commonwealth of Australia has issued another of its Service Publications, No. 31 of the series. The latest volume is entitled *Notes on Quarantine Practice for Quarantine Officers*,[1] and the compilation has been entrusted to the safe hands of Dr. Elkington, whose position as chief quarantine officer and experience based on work formerly carried out under the leadership of Dr. Gresswell, and vastly amplified later, are a sufficient warrant for the soundness of the rules laid down, and account for the high place which Australia holds among the foremost of the world's health organizers.

The notes are distributed into eleven chapters, dealing with the subject of quarantine in practically all its aspects—from training the employees in the service how to deal with rat-fleas to the behaviour to be observed by the visiting officer when entering the steward's cabin, nothing seems to have been omitted. The first chapter is introductory, and contains a rapid survey of the quarantine history and legislation from the earlier days when the question began to be considered seriously; this is followed by remarks upon the service itself and the various grades of persons employed in it, their duties, discipline, and so forth. The next chapter deals with the construction and working of ships so far as they affect the quarantine officer. At the end of this chapter, and before starting quarantine matters in real earnest, is a short comic interlude, the officer being instructed, for instance, that "Fanny Adams" means tinned meat, and a "donkey's breakfast" is a mattress (hence, perhaps, this animal's proverbial obstinacy). The following chapters contain very serious reading, dealing in succession with the local quarantine arrangements, the inspection of ships, including the powers and functions of the visiting officer. Next comes a chapter treating of the details to be attended to by the officer in regard to special diseases and suspected persons. The minutiae of active quarantine on ships and at stations occupy two chapters and deal naturally with the duties to be carried out from the point of view of inspection, removal of patients, disinfection, and the necessary reports and returns called for. The chapter on the epidemiology of ships is most interesting, but in our opinion rather unnecessarily detailed. To give one example: few

[1] *Notes on Quarantine Practice for Quarantine Officers.* By J. R. C. Elkington, M.D., D.P.H. Commonwealth of Australia, Department of Health. Service Publication No. 31. Melbourne: H. J. Green. 1925. (6 × 9½, pp. 151.)

THE STATE OF THE PUBLIC HEALTH.

SIR GEORGE NEWMAN'S REPORT FOR 1925.

ENGLAND AND WALES.

[First Notice.]

THE annual report of the Chief Medical Officer of the Ministry of Health, which has now been issued,[1] deals with the state of the public health in England and Wales during 1925; the statistics in it are drawn from the Registrar-General's returns relating to births, deaths, and infectious diseases, and the various data and records in respect of invalidity under the National Health Insurance Acts. Supplementary information has been obtained from the annual and special reports of medical officers of health, from investigations by medical officers of the Ministry, and from the work of other governmental departments concerned with the physical, industrial, and social welfare of the people.

The report contains twelve chapters and four appendices, and is characterized by a quiet optimism as regards the progressive triumph over preventable disease. In this respect a warm tribute is paid to the valuable work of the insurance medical service, to which one chapter is devoted, and also to the increasing amount of attention to maternity and child welfare.

Births and Deaths.

The birth rate during 1925 was lower by 0.5 per 1,000 than that of the previous year, and by 7.2 as compared with 1920, which was the apex year of the increase in birth rate which followed demobilization. The death rate was just under 12.2 per 1,000, approximately the same as last year. Sir George Newman repeats the statement in his previous report that the crude mortality rate is likely to show a slight upward tendency in the coming years in consequence of a change in the distribution of age groups of the population, and not attributable to any strengthening of the conditions prejudicing vitality.

The following diseases were prominent in the mortality rates, the figure in each case being the proportion in 1,000 deaths: cardiac and circulatory diseases, 177; bronchitis, pneumonia, and other respiratory diseases, 165; malignant diseases, 110; diseases of the nervous system, 99; and all forms of tuberculosis, 85. Comparison of these figures with those for last year shows that whereas in 1924 the principal cause of death was respiratory disease (174), the leading place in 1925 was taken by diseases of the heart and circulation, which have increased from 168 to 177. In the two years 1924 and 1925 the figures for malignant disease are respectively 106 and 110; for tuberculosis 87 and 85, and for diseases of the nervous system 100 and 99. By classifying the total deaths in age periods it appears that there is practically no change in the two years in any group except for a slight decline in the first four years of life.

Infant Mortality.

In a table of the infant death rates for various age periods since 1881, it is shown that the reduction in mortality has affected mainly the age period of 3 to 12 months; the death rate under 4 weeks still remains relatively high. As regards the causes of death, an increase in whooping-cough was counterbalanced to some extent by a decrease in influenza. The maintained low level of infantile mortality (75 per 1,000 births) indicates that there was in 1925 a saving of some 37,000 infant lives. It also implies a healthier physical condition in children from 1 to 5 years of age, and a better state of personal and public hygiene. Sir George Newman adds that there is still room for further reduction, particularly as regards the exceptionally high mortality in the first four weeks of life, and the mortality among the illegitimately born, for whom the death rate under 1 year per 1,000 born was 136, as compared with 75 for all births.

[1] *On the State of the Public Health.* Annual Report of the Chief Medical Officer of the Ministry of Health for the year 1925. H.M. Stationery Office. (Med. 8vo, pp 240. 3s. net.)

Mortality due to Respiratory Diseases.

Although respiratory diseases came second in the list of causes of death during 1925, Sir George Newman devotes special attention to them in view of the possibility of their reduction by preventive measures. Influenza has retained its unhappy prominence. Each year since 1918 (except 1923, and for females 1921) has been characterized by a higher influenza mortality rate than 1906 to 1910, and both 1922 and 1924 surpassed 1891–95, the previous worst quinquennium. Pulmonary tuberculosis, on the contrary, has continued to decline; no year since 1918 had so high a death rate as 1906–10, and the rate for 1924 was for males only 74 per cent., and for females 79 per cent., of the rate for the five-year period. Other respiratory diseases in this respect occupy a middle position between influenza and pulmonary tuberculosis; the death rate for 1924 showing an improvement on the 1906 to 1910 figures of 16 per cent. for males and 17 per cent. for females, which is a greater relative improvement than has previously occurred. Commenting on the variation in death rates due to respiratory diseases since 1851, Sir George Newman recalls the observations of William Farr, who, after studying the increasing death rates due to bronchitis and pneumonia from 1850 onwards, suggested in 1866 that smoke pollution of the atmosphere as a probable cause should be dealt with. He returned to the attack with more decision in 1869, and urged the adoption by manufactories and kitchens of smoke consumption. In 1871 Farr admitted that the still increasing death rate might be partly due to change of nomenclature and improved pathology, but he also incriminated imperfect ventilation and dusty conditions in mines, shops, and factories. In 1875 he referred to risks in this respect arising from atmospheric temperature changes, one of his favourite lines of study, and again insisted on the importance of particles in the air. Sir George Newman remarks that Farr was well acquainted with the factors to which most importance is still attached. Under the heading of "Variation of mortality in districts," reference is made to the Registrar-General's annual report for 1913, which contained a table of pneumonia mortality rates in county boroughs, urban districts, and rural districts throughout England and Wales. Sir George Newman states that the death rate from pneumonia in 1924 in each of these classes was substantially the same as in 1913, and he quotes the words in the 1913 report: "Evidently pneumonia is to a large extent a preventable disease, and the North of England has still much to learn with regard to its prevention." He adds, as his own comment, "In a word, pneumonia is mainly a disease of industrial and urban districts, due to the total complex of town life." He then passes to the regional distribution of pneumonia notifications, and cites the year 1923, which was not conspicuous for any heavy influenza mortality. A table of incidence rates during four-weekly periods of this year demonstrates the unfavourable prominence of the northern and north-western parts of England compared with the rest of the country, the high incidence in the counties of Lancashire and Cheshire being particularly significant. The occurrence of harsh climatic conditions does not appear to explain these results fully, though statistical evidence indicates that sharp changes of temperature, particularly in their effect on the aged, are the real basis of the evil reputation of climate in relation to respiratory disease. Thus the maximum of mortality is reached, not in mid-winter, but in the early spring, in March, a time of great temperature variations. Generally speaking, a fall of temperature below the average for the season is coincident with an increased mortality; other instances of this relation were included in a special report by the Ministry on the influenza pandemic which was discussed in the JOURNAL, 1921 (vol. i, pp. 205, 348, and 355). The increase of mortality is not to be considered an inexorable consequence of a fall of temperature, for other factors have a modifying influence, and their statistical evaluation is a very difficult matter. Sir George Newman urges the necessity of more experimental and small-scale investigations, and concludes that there is undoubtedly an excessive rate of mortality in the north-western part of England from respiratory diseases which could be ameliorated by an increase of knowledge

diseases. Of these, the greatest number, 370, were attributed to measles; 175 were due to whooping-cough, 111 to diphtheria, 90 to scarlet fever, and 151 to diarrhoeal diseases. There were 45 deaths from encephalitis lethargica and 27 from cerebro-spinal meningitis, as compared with 39 from the former disease and 23 from the latter during the corresponding quarter of the preceding year. Deaths from influenza numbered 797, as compared with 198 in the corresponding quarter of last year. The number of deaths attributed to tuberculosis was 1,436, which was 74 more than in the previous quarter, but 107 fewer than in the second quarter of last year. Deaths from malignant disease numbered 1,653, which was 27 more than in the previous quarter and 1 more than in the corresponding quarter of last year. Pneumonia accounted for 1,536 deaths, which was 152 fewer than the previous quarter, but 394 more than in the corresponding quarter of last year.

Death from Anthrax in Glasgow.

A fatal case of anthrax occurred recently in a northern district of Glasgow; investigations by the public health department have not yet definitely ascertained the source of the infection, but it is believed possibly to have been derived from a shaving-brush. Recently a case of anthrax was announced from Manchester as attributable to the use of cheap shaving-brushes imported from Czecho-Slovakia, and the Glasgow authorities withdrew from sale a number of brushes which had been included in the same consignment. These, on bacteriological examination, were found to be free from anthrax spores, but a different type of brush manufactured in the same country revealed anthrax spores in large numbers. The public health department has issued a warning as to the danger of using cheap shaving-brushes. The brushes in question had been retailed at prices varying from 6d. to 9d.

Abolition of Slums.

At an interview which a deputation from the Slum Abolition League had recently with the Glasgow Presbytery Dr. Robert Forgan, secretary of the League, expressed the hope that the Church of Scotland would form a housing committee. Referring to a recent announcement that the corporation of Glasgow had approved of the erection of another 650 houses, Dr. Forgan remarked that all the houses in contemplation were of a type for people well able to afford a good rent. In order to rescue the slum dwellers from their present horrible conditions and to put them into new environments, houses at a much more reasonable rent were required.

Caledonian Medical Society.

The forty-first annual meeting of the Caledonian Medical Society will be held at Storrs Hall Hotel, Windermere, on Friday, September 24th, at 3 p.m. The annual dinner, at which ladies will be welcomed, takes place on that day; members of the society intending to be present are asked to communicate with Dr. W. E. Henderson, Applethwaite Lodge, Windermere, before September 14th.

England and Wales.

Public Health in Wales.

In the seventh annual report of the Ministry of Health for 1925-26 the section relating to the Welsh Board of Health contains interesting details of the progress made in the provision of hospital treatment for maternity cases and for crippled children. The number of municipal maternity homes in Wales is now four, with a total accommodation of thirty-one beds; in addition nineteen local authorities have arrangements with voluntary hospitals for the admission of patients under the maternity and child welfare scheme, and a proposal is under consideration for the establishment of a small maternity home by a voluntary agency in connexion with the scheme for the training of midwives. Two homes for mothers and babies established by voluntary agencies furnish thirty-seven beds for mothers and twenty-nine for infants. There is at present only one home for children under 5 years of age in Wales; this has accommodation for fifty. Hospital treatment for crippled children is provided by thirteen local authorities, nine having made arrangements with the Prince of Wales's Hospital at Cardiff, three with the Shropshire Orthopaedic Hospital, and one with the Royal National Orthopaedic Hospital in London. Most of these authorities have also made arrangements to deal with out-patients and to supply after-care treatment. Schemes for the treatment of crippled children are being planned by eight other authorities. In view of the general increased activity in respect of maternity and child welfare several local authorities have found it necessary to increase their whole-time medical staffs.

Although in 1924 there was a slight decrease in the previous progressive decline in the infant death rate, the figure being 77 per 1,000 births, as compared with 74 in the previous year, the rate for 1924 was considerably lower than the rates for the years before 1923. The maternal mortality rate for 1924 was 5.01 per 1,000 births, which, though the lowest for some years, is higher than that for England and Wales combined. The number of stillbirths remains high, the number notified per 100 registered live births having increased from 4.1 in 1921 to 4.7 in 1924; the notification of stillbirths is stated to be probably incomplete. The percentage of the notification of births in 1924 was 94.8, as compared with 91.6 in 1921. The number of visits paid by the 454 health visitors during 1924 to children under 5 years of age was 482,884, an increase of more than 70,000 over 1921; visits were paid to approximately 11,000 expectant mothers. The number of trained midwives practising in Wales increased from 1,439 in 1923 to 1,487 in 1924, and the number of untrained midwives decreased from 509 in the first year to 443 in the year under review. Of the 57,426 births registered in Wales in 1924, about 90 per cent. were notified by midwives, and medical aid was summoned by them in 9,041 cases during the year, which represents an increase of 670 as compared with 1923, and of over 1,600 as compared with 1922. During the year 1925-26 eight new district nursing associations, employing nine trained nurse-midwives, were established; most of these nurses also act as part-time health visitors in rural areas. The number of maternity and child welfare centres in existence on March 31st, 1926, was 243; thirteen of these were provided by voluntary societies and the remainder by local authorities. More than fifty new centres have been established during the last five years, and in several urban areas, owing to the increase in the attendance, additional sessions have had to be arranged. Special ante-natal sessions are now held at nine centres—mainly in the county boroughs—but expectant mothers are encouraged to attend at many other centres. Dental treatment is now provided in connexion with the centres of eleven local authorities, and ophthalmic treatment by six; various minor ailments are dealt with at the centres of seventeen local authorities.

There was an increase in the number of new cases of tuberculosis from 4,794 in 1924 to 5,176 in 1925, due probably to improvement in notification rather than to increased incidence of the disease. On December 31st, 1925, there were on the registers of the medical officers of health 12,364 patients with pulmonary tuberculosis, and 4,514 with non-pulmonary disease; this excludes five sanitary authorities with an estimated total population of 24,000, from which figures have not been received.

All the county and county borough councils in Wales have now made arrangements for the treatment of venereal diseases, and during the year under review two auxiliary centres were opened for the treatment of mothers and infants referred from maternity and child welfare centres. There are now nine approved treatment centres and three auxiliary treatment centres, which work in conjunction with maternity and child welfare centres.

The number of medical practitioners under agreement with the Welsh Insurance Committees has increased from 904 in April, 1925, to 950 in 1926, and the standard of service is stated to be satisfactory. The number of cases referred by approved societies to the regional medical officers during 1925 for examination with regard to capacity for work was 18,325, as compared with 15,108 in the previous year.

quarantine officers, we think, are likely to test a doubtful case of small-pox by Paul's test of inoculating the cornea of a rabbit with the fluid from a pustule, and forty-eight hours later enucleating the eye and examining for opacity in an alcohol-sublimate solution.

The final chapter, on the training of quarantine assistants, shows how very thorough and painstaking that training is, and further, how keen the authorities are that the high standard should be maintained, by making it a rule that every assistant officer should undergo a brief revision course every year. All the important diseases are considered, the possible effects if cases of them should be overlooked, the ways of preventing them, the modes of disinfection and fumigation, the duties of the several officers in their actual quarantine work, and in the filling in of forms, reports, and returns which may be called for.

As the title states, this publication consists of "Notes," and as such fulfils its aim; in fact, there is but one thing needed to enhance its value—namely, an index.

Mental Hospitals in New South Wales.

The report of the Inspector-General of Mental Hospitals for New South Wales for the year ended June 30th, 1925, has recently been issued. The number of insane persons officially known was 8,265, showing an increase of 120 over the figure of the previous year. The number of admissions during the year was 1,428. Natives of New South Wales formed 60.64 per cent. of the admissions, other Australian States 12.88 per cent., England 14.43 per cent., Ireland 4.90 per cent., Scotland 3.50 per cent., and other countries 3.64 per cent. The number of persons who recovered was 573, equal to a rate of 40.13 per cent. on the admissions and readmissions for the year. Of the 550 deaths during the year, 188 were caused through diseases of the brain: 65 were due to general paralysis, 40 to inflammation and other diseases of the brain, 27 to epilepsy and convulsions, 34 to maniacal and melancholic exhaustion, and 22 to apoplexy and paralysis.

The report comments on the valuable work done by the various reception houses where patients with slight mental disturbances of short duration may secure suitable treatment without the necessity of certification. During the year 1,687 persons were admitted to the reception houses; of these 667 were discharged, and thus avoided certification and removal to a mental hospital.

The Government measures to combat the overcrowded condition of the mental hospitals promise very shortly to bring considerable relief; but more buildings are still urgently needed. The lack of suitable accommodation for the criminal insane has been commented on in previous reports. Attention is again directed to the necessity of providing this accommodation, as the present lack of the requisite buildings causes many persons who should be dealt with in hospitals to remain in prison.

The Inspector-General expresses his dissatisfaction with the lack of provision for mentally defective persons in the State. Other Australian States have passed measures enabling the department to take charge of such persons. The adoption by Parliament of similar measures for New South Wales is strongly urged. A bill designed to deal effectively with mental defectives was drawn up some years ago by the late Dr. Eric Sinclair. Its provisions were founded on the recommendations of the English Royal Commission on the care and control of those classes, but adapted to meet the special conditions of New South Wales. It would have brought under the supervision of the Education Department those mental defectives who were of school age or were likely to benefit by instruction in special schools to be established, and to place the others—that is, those who would not be likely to benefit by instruction and the adolescents and adults—under the control of the Inspector-General of Mental Hospitals. This measure, or some similar measure, is held to be imperative for the welfare of the State, and is demanded by a growing public opinion.

Endowments by Medical Men.

Sir Alexander MacCormick has handed over his private hospital in Sydney, "The Terraces," as a gift to the Presbyterian Church to use as a hospital in whatever form they shall decide. This is a private hospital of some forty beds, well equipped and established. It is understood that it will be carried on in the future by the Presbyterian Church mainly as an intermediate hospital.

Mr. Gordon Craig, honorary urological surgeon at the Royal Prince Alfred Hospital, Sydney, has endowed a fellowship in urology at the University of Sydney, the clinical work to be carried out at first at the Royal Prince Alfred Hospital. It will be for the purpose of training graduates in the special study of urology, the fellowship to be, in each case, for a period of three years, during which a fellow must undertake clinical work at the Royal Prince Alfred Hospital and research work at a laboratory fitted up and handed over to the University of Sydney by Mr. Gordon Craig. In all, this generous foundation will amount to a sum of £20,000. The clinical work will, for the next five years, be carried out at the Royal Prince Alfred Hospital under the control of Mr. Gordon Craig, who will thus keep an active interest in the scheme, which will naturally be of great assistance in assuring its success.

The late Sir Charles Mackellar.

The death is announced of Sir Charles Kinnaird Mackellar, K.C.M.G., M.B., Ch.M.Glas. Sir Charles Mackellar, besides at one time carrying on a large general practice, was also one of the most prominent of Australian public men. In 1886 he was appointed a member of the Legislative Council, and held the portfolio of Minister for Mines, being at the same time a representative of the Government of the Upper House. In 1903 he was appointed to fill an extraordinary vacancy that occurred in the Federal Senate. The work for which he was best known was that which he did when president of the State Children's Relief Board, where he was able to carry into practice the strong views he entertained as to the reception into institutions of such homeless children; and it was he who, during his fourteen years' tenure of office, carried out an extensive scheme of boarding out neglected children, a method that time has shown to be the most humanitarian. He also was instrumental in the establishment of the Children's Court and small farm homes for delinquent children. It was in recognition of this philanthropic work that a knighthood was conferred upon him in 1916.

Scotland.

Vital Statistics for Scotland.

From the second quarterly report for 1926 of the Registrar-General for Scotland it appears that the number of births for the quarter, totalling 26,996, is 825 more than that of the previous quarter, although it is 913 less than that of the corresponding quarter for last year. The birth rate of the quarter was 22.1 per 1,000. This is lower than the birth rate of all the second quarters of years since 1855, with the exception of the three war years, 1917-1919. Of the children born, 13,763 were males and 13,233 females. It is pointed out that in England and Wales the quarterly birth rate was 18.7. The number of marriages was 336 less than in the corresponding quarter of last year. The number of deaths registered in Scotland during the quarter was 17,004; this is 924 less than that of the previous quarter, but 1,093 more than that of the corresponding quarter of the previous year, and 205 more than the mean of those of the second quarters of the preceding five years. The quarterly death rate was 13.9 per 1,000. Of the total number of persons dying during the quarter, 3,947, or 20.9 per cent., were children under 5 years of age; 6,959, or 40.9 per cent., were persons between the ages of 5 and 65; and 6,498, or 38.2 per cent., were aged 65 and over. Deaths of children of less than 1 year old numbered 2,158, and as the registered births of the quarter numbered 26,996, these deaths equalled an infantile mortality rate of 80 per 1,000. These infantile deaths were 90 fewer than those of the second quarter of the preceding year and 378 fewer than the mean of the second quarters of the preceding five years. In England and Wales the infantile mortality rate for the quarter was 62, or 18 less than the Scottish rate. Of the 17,004 deaths in Scotland during the quarter, 903, or 5.3 per cent., were due to epidemic

but the pictures and description of these playing fields and club-houses reserved for Cadbury's workers will make the cocoa and sweetmeats prepared by them still more sweet.

STAFFORDSHIRE MENTAL HOSPITALS.

The problems of overcrowding, the necessity of early treatment of mental cases, and the decrease of alcoholism as a factor in the production of mental disorder, are amongst the principal features discussed in the annual reports of Stafford, Brentwood, and Cheddleton Mental Hospitals, issued jointly by the Staffordshire Mental Board. At Brentwood the total number of patients under treatment during the year was 1,104, and the average daily number resident 924, an increase of 22 over the previous year. As there is a ward fewer on the male side than on the female side, the male wards have become inconveniently crowded; and it is hoped that the question of providing further accommodation will receive attention at an early date. At Stafford Mental Hospital only the unusually low admission rate during 1925 has prevented the accommodation being unduly taxed. At Cheddleton the medical superintendent, Dr. W. F. Menzies, discussing the necessity for the establishment of a large colony for mental defectives, points out that such a step would enable the insane patients to have adequate accommodation and treatment. "Overcrowding," says Dr. Menzies, "is bad for the health of the patients, expensive in the fight against communicable infections, trying to the tempers of patients and staff alike, and ultimately expensive to the public, owing to the small but certain percentage who each year should have recovered, but remain chronic for life." The necessity for early treatment is shown by the fact that of the recoveries for the past three years at Stafford Mental Hospital, numbering 211 cases, 55 per cent. were admitted within two weeks of the reported onset of their mental illness, 36 per cent. within three months, and only 9 per cent. after three months had elapsed. At Stafford alcoholism was not found to be so potent a factor in the production of mental disease as in past years. The explanation of its decrease as an etiological factor at Brentwood appears to be partly the result of greater sobriety and partly to the fact that a number of alcoholic cases are being treated to recovery in other hospitals.

A CASE OF PLAGUE IN LIVERPOOL.

The Ministry of Health has been notified of the occurrence of a case of bubonic plague in Liverpool. The patient, a boy of 10, became ill on August 27th, and was removed to hospital, where he died on August 30th. The diagnosis of plague has been confirmed by the Ministry's bacteriologist. The boy's father was employed at the docks; he is now in hospital recovering from an illness the symptoms of which are suggestive that he too may have suffered from plague. The remaining members of the household are under supervision and all possible steps to prevent the spread of infection are being taken by the Liverpool Public Health Department. A medical officer of the Ministry is investigating the circumstances.

Ireland.

CENTENARY OF THE COOMBE LYING-IN HOSPITAL, DUBLIN.

AN international congress is being held during the coming week in Dublin to celebrate the completion of the first hundred years of existence of the Coombe Lying-in Hospital, and we mentioned on August 21st (p. 358) some of the outstanding features of the programme. The inception and subsequent history of this institution presents many points of interest. The year 1825 had been one of poverty and sickness, particularly for the impoverished population of the Coombe district, and in the following year came one of those devastating epidemics of fever so common in the eighteenth and nineteenth centuries. The Rotunda was then the only lying-in hospital in the city, and one night two women, struggling towards it from the Coombe, were taken in labour, and next morning were found dead in the snow-covered streets with their new-born infants. In consequence of this a large ward was immediately set apart for obstetrical work in the hospital which John Kirby had established in 1822 in place of the old Meath Hospital, and arrangements were made for attendance on women in their homes. So started the Coombe Lying-in Hospital towards the end of 1826. Expansion followed to meet the great demand, and in 1829 the hospital was reopened as a wholly lying-in institution with thirty-six beds under Richard Reed Gregory as its first master. Gregory, however, died of typhus soon after publishing a report of the hospital in 1830, and the building was closed for eight months, but it then restarted work under Thomas M'Keever. Its existence was soon threatened by an unfortunate dispute with the Rotunda, arising largely out of its status as an educational centre, and for many years its beneficent work was harassed by financial stringency. In 1837 the Duchess of Kent became patroness, and her example was followed in 1864 by the then Princess of Wales. In December, 1851, Benjamin Lee Guinness, Lord Mayor of Dublin, presided over its first public annual meeting, and later gave considerable financial help, which resulted in the provision of more adequate accommodation. In this good work he was succeeded by his son Sir Arthur Guinness, and a new hospital was opened in 1877, since when its progress has been rapid and continuous. In connexion with the centenary a special number of the *Irish Journal of Medical Science* has been issued, and we hope to publish in a later issue a more detailed account of the history of an institution which has battled through to success in spite of a long succession of difficulties and disasters.

TUBERCULOSIS IN BELFAST.

Dr. A. Trimble, in his annual report on tuberculosis in Belfast, mentions the poverty and destitution due to unemployment, and describes the attempts made to mitigate the evil. As the census returns were not available, various calculations appear as estimates. The total number of new tuberculous patients was 1,111, the lowest figure since the institution was opened. There were 31,915 re-attendances, and in the case of 216 patients under domiciliary treatment it is stated that the disease had been either apparently cured or become quiescent. The highest tuberculous incidence was found to occur between 7 and 17 years of age, school children furnishing the largest number. Over 41 per cent. of the new patients were living under conditions favouring infection and had been presumably infected; the necessity of personal cleanliness in the household is therefore emphasized. Out of 901 patients definitely diagnosed as tuberculous, only 231 had separate sleeping accommodation. Dr. Trimble continues his series of statistics relating to the effect of tuberculosis on pregnancy, and furnishes the following figures. In the analysis of the end-results of pregnancy it was found that in 2,168 tuberculous mothers 7.9 per cent. miscarried, 89.3 per cent. were delivered of a living child at full term, and 2.8 per cent. of a dead child. Of 1,975 pregnant tuberculous women, 32.9 per cent. improved, 42.3 per cent. remained unaltered, 20.6 per cent. were worse, and 4.2 per cent. died within twelve months of delivery. Dr. Trimble believes that in mild forms of the disease in patients with good environments pregnancy and child-bearing have but little effect on the clinical course of the disease. Details are given of the *x*-ray, dental, and bacteriological departments, and an account is added of the Calmette, Spahlinger, and sanocrysin treatment, and some observations on the employment of the last named treatment in Belfast. During the year 444 patients were admitted to the municipal sanatorium. On the whole improvement is admitted, but Dr. Trimble insists that much remains to be done.

ELECTION OF A MEDICAL OFFICER IN NORTHERN IRELAND.

On August 17th the Enniskillen Board of Guardians considered the appointment of a successor to the late Dr. Moore Betty, F.R.C.S.I., who had been medical officer to the Enniskillen Union Hospital and Fever Hospital for many years. According to the report in the daily press, all the candidates held good degrees; but the supporters of individual candidates openly gave extraordinary reasons for their commendation: one said that on the day of the funeral of Dr. Betty "they" gave a guarantee that they would support Mrs. Betty—that is, support whoever bought

THE ORDER OF ST. JOHN AND THE BRITISH RED CROSS SOCIETY.

Further expansion of the work of the Home Service Ambulance department of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society has been found necessary. In the sixth report of the council, which covers the period from April 1st, 1925, to March 31st, 1926, it is stated that the number of ambulances has been increased by ten during the year, and that 76,886 patients were carried, as compared with 70,432 in the previous year. Illustrations are given of the great value of the services rendered by these 351 ambulances and their staffs in saving life and affording quick transport of injured persons to hospitals. Help has been received from the Royal Automobile Club and the Automobile Association. The greater availability of ambulances has, moreover, enabled a larger number of sick persons to be transferred from their residences to nursing homes and hospitals. Throughout the country new divisions and detachments are being established by the two organizations for the provision of training in first aid and nursing which is often centred on the ambulances. In many counties every ambulance is worked by the associated Order and Society, and it is thought that there will be no serious difficulty in completing eventually the process of making the whole ambulance service of the country an integral part of the active peace time work of the two organizations. The ambulances are distributed according to local needs, and are replaced when they are worn out. There was a small diminution in the work of relieving sick and disabled ex-officers, but a slight increase in the number of tuberculous ex-officers who received temporary help while their cases were being investigated by the Ministry of Pensions. Assistance has also been given to some ex-officers whose disability was not considered by the Ministry to be attributable to their military service. Weekly grants for extra diet were made to many tuberculous ex-officers who were undergoing treatment at home as a sequel to residence in sanatoriums. The temporary relief of ex-service men suffering from sickness or disablement attributable to war service has continued, and help has also been provided for widows and dependants. During the year under review 372 grants were made to 62 hospitals and other institutions under the control of the Ministry of Pensions, and various kinds of recreation have been organized for the patients.

TREATMENT OF SCHOOL CHILDREN AT BRIGHTON.

The report of the school medical officer for the county borough of Brighton for 1925 shows a considerable increase in the number of attendances at the school clinic, though there is a considerable decrease in the numbers of children medically inspected in what are called the code groups of entrants, intermediates, and leavers. The reduction in the numbers in these groups corresponds to the fall in birth rate. The procedure before operation for tonsils and adenoids has been improved by the introduction of more thorough inquiries into the existence in the patient or his surroundings of infectious disease. The after-treatment has also been improved by keeping the children in the sanatorium for one night, and sending them home by ambulance, accompanied by the school nurse. The report contains an interesting account of the case of a partially deaf and dumb boy, who could not be taught in an elementary school, and was certified as fit for teaching and training in the Brighton Deaf School. To this the father appears to have objected; he was summoned and fined on several occasions; but after various shifts and subterfuges for a year his business failed, and he eventually took the boy to the deaf school. As the parent can make no contribution to the boy's maintenance, the committee is waiving any claim for the moment. It seems that under Section 54 of the Education Act, if the authorities are satisfied, after consultation with the parent, that suitable provision for a defective child over 7 years of age is not being made, they may require the parent to send the child to a certified class or school, and the order of a court of summary jurisdiction "shall be *a sufficient authority for the conveyance* of the child to the class or school named in the order." The Brighton authority finds that there is doubt about the exact interpretation of the word "conveyance." If it does not mean that the child can be forcibly removed, a parent with the necessary means can ignore the order by paying at intervals statutory fines. In the dental department, out of some 2,000 children leaving school 245 were found to have healthy mouths, and 138 of these had every tooth perfect. It is interesting, perhaps, to compare this position with that of the inhabitants of Tristan da Cunha (as noted in the BRITISH MEDICAL JOURNAL of August 28th, p. 399), who appear hardly to clean their teeth at all. However, the school medical officer at Brighton is of opinion that the percentage of healthy mouths in Brighton will increase as the result of periodic inspections and treatment.

BOURNVILLE: WORK AND PLAY.

Members of the Association who attended the Annual Meeting at Nottingham this year could not have failed to gain some acquaintance with the organization of factories, for Nottingham is a noted centre for great "works." It may be that some of the more curious also saw a few of the lesser factories from beneath whose humble roofs quite excellent work is turned out. Maybe the latter type of works represent the workshops of days gone by and show the transition stage between the independent worker and the factory group. However much we may sigh for the passing of the independent hand worker (yet it is probable that there are more of these than ever to-day), there can be no manner of doubt of the need for great organized industries and for factories if our vast population is to be fed and clothed and housed in an efficient manner. The word "factory" has a bad smell about it, something like the smell of schoolrooms of fifty years ago! But the modern factory is as well kept as the modern school, and it is often no less indicative of life. The decrying of organized work on account of its "monotony" has been somewhat overdone of late, and there is a healthy reaction in the recognition that there is something satisfying in regularity and repetition. These reflections have been stimulated by the receipt of a handsome pamphlet issued by Cadbury Brothers, Ltd., as the *Bournville Annual*. This is a publication started in 1921 with the object of keeping customers informed about some part of the work of cocoa making. Each *Annual* deals specially with some one subject. In past years transport and housing have been described. The latter publication was of particular interest in that it gave a full account of Bournville garden city—a piece of work that the most progressive of civic communities might plume itself upon accomplishing. This year's publication deals with "work and play." The authors, with becoming modesty, suggest that this can hardly be so likely to interest widely as did the earlier publication on housing, but we are inclined to think that this year's subject is of even greater importance. High-pressure organized work differs in one material manner from independent work. The independent worker may go comfortably about his or her work for twelve hours or more at a stretch, just because he is not working all the time; he works as he pleases or as "the spirit moves him." He has no need for the pastimes of leisure, for leisure is taken at many intervals during the work, and perhaps in contemplating it. The worker in organized industries is in a different position; he or she must stick to it without a stop according to the time-table—start promptly, work strenuously, rest for the given interval, begin again, and so on to the end of the working period. A slack worker is ruinously expensive. It follows that the hours of organized work must be short, and there flows from this the problem of leisure—how to fill the unoccupied hours of the day. Nothing to do for a third of the day must be more repugnant than any amount of overwork. Dwellers in Bournville garden city who are gardeners have no lack of occupation. But there are some who cannot dig, and for them and also for the diggers, in Rowheath adjoining there is a sports ground of a size and equipment that must make the mouth of a secretary of any "sports club" water. The recollection of the friendly aspect and beauty of Bournville garden city lasts on from a visit paid during the Birmingham meeting. We have not seen Rowheath,

During the last four years I have endeavoured to solve the question whether immunization could be practised by studying bovine tuberculosis, and I have already published certain conclusions in the *Annals* of the Pickett-Thomson Research Laboratory. I found that tuberculosis in a herd of cattle comes mainly from breeding from immature cattle. If immature cattle are used for breeding, the offspring are more susceptible to infection and to acute massive manifestation of the disease. This is true of both the male and the female. Factors of less importance in etiology are prolonged lactation and inadequate rest. The reason for the lesser importance of these two factors is that the tuberculosis is of a less acute nature and that the animals have a better chance of establishing some degree of resistance. I found that the young apparently sound female which was immature produced the calf most likely to become acutely tuberculous and acutely infective. I found that the mature cow, which reacted to the eye test, was far more likely to have healthy offspring than the immature animal inadequately reared.

It is manifest that decadence, as Aristotle contended, is a stern reality, that events occur in sequence, from the inability of man as a reasoning being to co-ordinate generation and growth.

I came to the conclusion that there is a great deal in immunization, but that to offer immunization only, or to make immunization of a relatively high importance, would be to defeat the end the breeder had in view. I mean by this that if immunization took the breeder away from his old-fashioned conceptions which were definitely eugenic, I could not help him to establish a high-class type which would exist under the conditions involved in commercial farming.

The work of the dispensary system is not merely with the manifestly tuberculous, but by adequate co-operation with all other medical men to collect young people and pick out those who require to be cared for till maturity. It is to use the sanatorium, and by modifying the life and feeding generally to try and give an adequate constitution which may be handed on to the next generation. This work is especially easy in the care of girls before puberty. The main factor in the reduction of the tuberculosis death rate is the more sensible age at which people marry, and that nowadays they breed truer.

The work of the tuberculosis officer is not of a spectacular nature, and unless he has been continuously at the work for a long period he will be apt to grasp at such quicker methods as immunization. I would, however, contend that immunization has a very important place.

The value of the work Sir Robert Philip has done by the introduction of the dispensary system—a system of co-operation with everyone else, a system which has spread widely—is that it is the only system which can help to establish type. His work will be measured by the recognition of the influence of tuberculosis as a factor in civilization.

The tuberculosis officer will retain the conviction that the solution of the tuberculosis question is in the tuberculous. He will continue to regard his patient as a criterion, and when he sees deterioration arising from the infringement of inevitable law, he will tend continually to direct his observations towards the conditions which modify growth and health in the youth of his area.—I am, etc.,

Northallerton, Aug. 23rd. J. J. THOMSON.

THE TUBERCULIN DISPENSARY.

(*Abridged.*)

SIR,—Dr. Camac Wilkinson's letter (p. 967) and your commentary (p. 953) in the BRITISH MEDICAL JOURNAL of June 5th will be welcomed by all who have been using tuberculin in ambulatory cases in spite of the "damning with faint praise" of authors and professors who so often refer to the Brompton Hospital Report of the nineties. Sir Almroth Wright's valuable work in 1903-4 reintroduced tuberculin as a valuable remedy in tuberculosis and placed it on a scientific basis. I have used tuberculin since 1906, first as laid down by Sir Almroth Wright, and later following Dr. Camac Wilkinson's method, and can endorse with conviction the latter's opinion, that tuberculin is by far the best remedy yet known for 75 per cent. of those suffering from tuberculosis and in the type of cases quoted by him, "provided it is given in doses of suitable strength, properly timed, properly administered, and carefully controlled by constant clinical observations."

I quite agree with Dr. Robert Carswell, in your issue of June 12th, when he says that the treatment should be supplemented by every other useful adjunct. It would, however, be difficult in a country like India to give the wage earner complete relief from daily toil; light work would be possible and profitable, but enforced idleness might do more harm than good.—I am, etc.,

C. J. Fox, L.M.S.S.A.Lond.,

July 29th. Clinical Research Laboratory, Simla, India.

CRIMINAL RESPONSIBILITY.

SIR,—I have read with interest your leading article (August 28th, p. 392) on criminal responsibility in relation to insanity, and especially dealing with Sir E. Marshall-Hall's able article in the *Sunday Express* of July 25th. As you are aware, this is a subject on which for many years I have been writing, and my opinion of the present law and its effect upon many judges has been brought home to me by practical experience.

I fear there is little chance of the M'Naghten rule being revised, although it is entirely opposed to the present scientific knowledge of mental disease. How can we then alter the paradoxical position by which an insane prisoner is condemned to death in the criminal court, his appeal dismissed by the Criminal Appeal Court, and he is then either handed over to the common hangman or he is sent to the criminal asylum on the report of two medical men who have visited him in the condemned cell and who, under no cross-examination, have put on a piece of foolscap paper their opinion that the condemned prisoner is insane?

I maintain that if we had degrees of murder as in so many other countries this paradoxical condition would not exist.

No one can deny that there are degrees of murder, and yet, if found guilty, the punishment is the same for all. Armstrong, who slowly poisoned his wife; Smith, who drowned his wives in a bath after obtaining possession of their money, assuredly deserved to hang; but are there not many murders committed with no definite "malice aforethought," some on the impulse of some strong emotion and some by persons of definitely weakened intellect and to whom justice could be meted out in the criminal court if the jury were by law able to classify murders in first, second, or third degrees? I believe I am right when I say that almost every murder in which insanity is the only defence would then be placed in either the second or third degree, and the prisoners while serving their sentence in penal servitude, if proved to the satisfaction of the prison medical officer to be insane, could be transferred to the criminal asylum.

I was glad to see recently that the Right Hon. E. Shortt, K.C., late Home Secretary, strongly advocates degrees of murder, the jury to decide in which degree the crime is to be placed, the judge to pronounce sentence.

I fear the statement so often made by judges, that no insane man or woman is now ever sent to the scaffold, is a statement not warranted by facts—known by medical men who have given evidence in these sad cases.—I am, etc.,

Bournemouth, Aug. 29th. LIONEL A. WEATHERLY, M.D.

GOITRE IN CHILDHOOD.

SIR,—In the discussion following Dr. Milligan's interesting paper on goitre in childhood, published on August 28th (p. 373) reference was made to the fact that endemic goitre was still very prevalent in Derbyshire, and doubt was cast upon the view by some speakers that it is not diminishing in this county.

A large number of medical men who have practised in this county for many years have told me, both personally and on inquiry, that in their experience endemic goitre has very considerably diminished since they first commenced practice; moreover, the prevailing opinion when many of them commenced was that the disease had for long been

Dr. Betty's practice. This was denied, and a very undesirable argument ensued; the seconder said that he supported the candidate because he had signed an agreement to give up the appointment to young Mr. Betty when he got qualified, and the Bettys were an old and respected Fermanagh family. The supporter of another candidate said that he did so because his candidate was a native of the union, in which the family had been resident for 200 years. In the report in the daily press only one slight reference is made to the experience or qualifications of the candidates. No mention is made of the best candidate or of the best qualified. One may be sure that neither the candidates nor the family of the late Dr. Moore M. Betty are gratified with the efforts, although no doubt kindly meant, of their friends.

BELFAST MENTAL HOSPITAL.

The report of the Belfast Mental Hospital for 1925 shows the average daily number of patients was 515 males and 534 females; 219 new patients were admitted. The most prevalent type of disease was melancholia, which affected 28.3 per cent. of the whole of the admissions. Of 139 patients discharged 66 had recovered. An outbreak of typhoid in February, April, and June resulted in two deaths; otherwise the general health was good. The building of one villa for acute cases, one observation villa, one convalescent villa, a residence for the medical superintendent, and a new gate lodge, was commenced during the year, and these additions will be ready for occupation in October: this will provide the much required accommodation for the increasing numbers. The net capitation cost was £34 10s. 2d.: it is the lowest since 1918; and the farm account shows a profit of £2,301. The Ministry's report was highly favourable.

Correspondence.

SANATORIUM TREATMENT.

SIR,—In your review of the statistical inquiry by Messrs. Stocks and Karn into the influence of sanatorium and dispensary treatment and of housing conditions on pulmonary tuberculosis, you do not mention some important fallacies which have not been avoided by the authors.

They come to the conclusion that patients who have dispensary treatment also; and the presumption is that if further progress and of survival than those who have not; and that there is no consistent evidence that bad housing conditions have any influence on the ultimate progress or rate of recovery.

To arrive at reliable conclusions in such an inquiry it is essential to choose similar material in the two groups and to make the difference in treatment mutually exclusive; and neither of these precautions appears to have been taken.

In spite of the statistical safeguards adopted, it is by no means certain that the material was similar in the two groups. Patients are recommended for sanatorium treatment because they specially need it; as far as possible nowadays sanatorium methods are adopted in home and dispensary treatment also; and the presumption is that if patients are sent to a sanatorium the home was unsuitable for such treatment, or the chances of recovery at home less favourable for some other reason. The factors considered by the authors as influencing selection are quite relevant, but they by no means cover the whole ground. Indeed, so many are concerned as to throw doubt on the value of such statistics for the particular purpose: but space precludes further detail here.

Then as regards treatment the two groups are not mutually exclusive. In one we have non-sanatorium treatment which includes a variable proportion of sanatorium methods; in the other, non-sanatorium treatment with stricter sanatorium treatment added for a short time. An average case of pulmonary tuberculosis needs one or two years' treatment. It is exceptional in this country to allot more than from three to five months of the time to sanatorium treatment. This may be sufficient to restore quite early favourable cases to health, but not the majority of those admitted to a sanatorium or applying for treatment. Patients are only exceptionally admitted in a really early stage, and are usually discharged long before the disease is quiescent, the idea being to complete the cure at home with or without dispensary help.

In these circumstances useful conclusions may be drawn as regards the immediate results of treatment; but the later results depend so largely on conditions of life in great variety that it is difficult to institute a fair comparison. Immediate results are usually good, in spite of the handicaps. If relapses happen after leaving the sanatorium, surely the conditions of life are to blame rather than the sanatorium treatment; and conclusions to the contrary from statistics rather suggest that important factors have not been taken into account.

The authors have evidently taken much trouble over their report, which will be of great value, although some of the conclusions are very misleading if taken without further qualification.—I am, etc.,

F. R. WALTERS,
President of the Society of Superintendents of Tuberculosis Institutions.

Farnham, Aug. 31st.

TUBERCULOSIS AND THE STATE.

SIR,—In the interesting editorial article entitled "Tuberculosis and the State," published on August 21st (p. 349), there are several points which should be of more than passing interest to the tuberculosis officer.

The article itself is indicative of a feeling that things might be better if inquiry was made more into causation, and if effort was directed more towards the establishment of resistance than towards the prevention of infection; in fact, it is almost a challenge to the tuberculosis officer to vindicate his position in society. I am sure that there is nothing which is likely to do so much good as such a challenge.

The criticism that the dispensary system is mainly of statistical value should be answered. The system has been established not only in England but in many other countries. Where there is no definite effort on the part of the State such as exists here, still the dispensary for the supervision of the tuberculous comes into being. Where there is no full co-ordination between the health authorities, the school inspectors, and the medical profession generally, the tuberculosis dispensary exists and remains. The reason for the presence of the dispensary in such countries as Canada and the United States of America is that the sanatorium ultimately demands its existence by asking that the supply of patients may be made up of types which can be established in health. Hitherto it has been possible to find such types only through the agency of the tuberculosis dispensary. The function, indeed, of the dispensary in the long run is the establishment of the type which can exist in that area. It will be seen, therefore, that it is the dispensary which co-ordinates the work done, and in time establishes a close contact with all workers who have to do with tuberculosis.

In 1912 I was instrumental in commencing the dispensary system in Vancouver, British Columbia, and although there was no great enthusiasm at the beginning, within five years so great was the considered value of its work that the general public raised a very large sum to equip an up-to-date clinic for diagnosis and treatment. In fact, it was much easier to raise money for the dispensary system than for the sanatorium. Such was the feeling towards the dispensary system in that district.

Perhaps, however, the dispensary as it exists in England tends to cease to develop clinically, while the development would appear to be initiated by considerations having to do with the infectiveness of the disease.

In your editorial article it is suggested that the dispensary should be made use of more in connexion with such questions as immunization and of generally doing something towards increasing the resistance of the individual against tuberculosis. To go into the question of immunity is to enter into a controversy. What is immunity? Can an individual be established in immunity to tuberculosis in one generation? Is immunization of children a practical proposition? The question is so large and involved that there is room for many points of view.

bowel, through a fistula, their presence is shown by the extrusion of pencils of faeces from the wall of the bowel into the lumen. Before the extrusion of this pencil no sign of an opening was visible, and after the extrusion the bowel wall was quite smooth. The extrusion occurred frequently, when the patient was mentally at ease in the presence of the nurse; but in the presence of the doctor was suppressed, except on rare occasions. The nurse in charge stated that the bowel in the region of the ileo-caecal valve was full of holes, from which faecal pencils were extruded frequently.

The crypto-saks may have their openings closed by disease; the retained contents would then cause trouble by fermentation.

The *x*-ray photograph No. 10 in the BRITISH MEDICAL JOURNAL article, which is described as diverticula occurring in an otherwise normal bowel, suggests to me a series of these crypto-saks photographed while they contained fluid faeces mixed with barium.

In the future, as series of *x*-ray plates are taken and studied, they will show whether these crypto-saks occur regularly along the large bowel in the ordinary healthy individual. The evidence brought forward in my book, *The Ileocaecal Valve*, mentioned above, would point to crypto-saks being present along the course of the large bowel.—I am, etc.,

A. H. RUTHERFORD, M.D.Ed.

Sydney, N.S.W., May 18th.

LIVE BIRTH.

SIR,—The paper by Dr. Godfrey Carter (August 28th, p. 385) draws very timely attention to the question of infanticide, and, most important of all, the legal definition of live birth.

A full-time normal child, with lungs completely or almost completely aerated and expanded, has lived, and should have survived with proper care; the question whether it was entirely separated from the mother at the moment of death should not be considered. These conditions being found at the *post-mortem* examination should lead to the mother, or other person present at the birth, being put in the witness-box to explain why the child did not survive. There is, however, unfortunately, as can easily be understood, considerable difficulty in finding the mother or person disposing of the body of a dead child, and unhappily these cases of concealment of birth are fairly frequent in big centres.—I am, etc.,

Woodbridge, Aug. 29th. HOWARD M. STRATFORD.

GONGYLONEMA AND CANCER.

SIR,—A paper by Professor R. T. Leiper, entitled "Some observations and reflections on recent attempts to implicate the Gongylonema worm in the causation of cancer in man," recently published in the annual report of the British Empire Cancer Campaign (p. 56), contains many references to work of my own on *Gongylonema*. These require some comment. Professor Leiper's remarks may prove misleading to those who have not followed the work which he criticizes. He seems to imply that much of the recent work in which I have had the honour to be associated with Dr. Sambon and the Cancer Field Commission of the Tropical Disease Prevention Association, bearing directly or indirectly upon the problem of cancer causation, is worthless or even pernicious.

My own share in the work, which was mainly concerned with certain districts in Northern Italy, has been the subsidiary one of investigating certain helminthological problems, chiefly concerning nematode worms of the genus *Gongylonema*.

(1) In a paper published in the *Journal of Tropical Medicine and Hygiene*, February 2nd, 1925, I endeavoured to show (among other things) that there was no satisfactory morphological distinction between two alleged "species" of *Gongylonema*—namely, *G. pulchrum* of swine and *G. scutatum* of ruminants. As the former was the earlier name, I proposed that it should be adopted, and *scutatum* be regarded as a synonym. In the same paper I ventured very tentatively to suggest that the *G. neoplasticum* of rats "may perhaps have to be added" to the synonymy of *G. pulchrum*. I was careful, however, to point out that (in addition to general size, to which I attached less importance) there was an important difference in one character between the two forms, namely, the length (though very variable) of the left spicule of the male. This organ was found not to exceed a length of 0.67 mm. in the specimens of *G. neoplasticum* available, whereas in specimens of the *Gongylonema* of ruminants it varied from 5.0 to 23.0 mm. In view of my inability to fill in the wide gap in these measurements I did not, and do not, feel justified in definitely regarding these two forms as one. My statement meant that, should the gap between them be filled up in the future, then it might perhaps have to be admitted that they were identical.

(2) In another paper in the same journal (October 15th, 1925) I recorded the result of my own examination of certain specimens of *Gongylonema* found in a human being and recorded by Professor Alessandrini of Rome, and stated that in my opinion they were indistinguishable from *G. pulchrum* (using this name, of course, as including *G. scutatum*).

(3) In a joint paper with Dr. Pan and Miss Juliet Sambon in the same journal (December 1st, 1925) I described (among other things) an experiment in which two rats were successfully infected with the *Gongylonema* of ruminants. Inasmuch as the left spicule of a male worm thus obtained measured 4.9 mm. in length, I did not in any way suggest that *G. pulchrum* had, by the change of host, been converted into *G. neoplasticum*. On the contrary, I was at some pains to prove that it had remained *G. pulchrum*.

Turning now to Professor Leiper's treatment of my work, I find that on page 58 of the "Report" he apparently uses my own identification of Professor Alessandrini's human *Gongylonema* as *G. pulchrum* to support the view that the *Gongylonema* occurring in man is not *G. neoplasticum*. On page 60, however, he represents me as believing that the two forms are the same species. Professor Leiper cannot have the argument both ways. Had I really formed a definite opinion that the species were identical, I could not have pretended to differentiate between them in the case of the human specimens.

My mind is still open on the question of the identity of these two forms, as I think is quite clear from all that I have written on the subject. However, Professor Leiper attributes to me a definite opinion in favour of it, and "to determine if there are any real grounds for" my alleged "supposition on the unity of the species," he proceeded to try to carry out the very experiment which I was myself performing—see (3) above—on the infection of rats with the *Gongylonema* of ruminants. In order to do this, while my colleagues and I were already in the Trentino with a grant from the British Empire Cancer Campaign, and without first offering us his valuable assistance, he went independently with Dr. Cameron to Italy, with another grant from the same body, to collect material. Returning to London, he used as intermediate hosts cockroaches from the Zoological Gardens, and was obliged to abandon the experiment on finding that his cockroaches were already naturally infected with the rat-*Gongylonema*. He then reversed the direction of his experiment, and found that he could transmit the rat-*Gongylonema* to sheep. Apart from the fact that *G. neoplasticum* occurs in the London Zoological Gardens, this appears to be Professor Leiper's only constructive contribution to the subject of *Gongylonema* infection, and I had already shown that the converse experiment was possible.

It is difficult, in any case, to see why the correctness of my alleged "supposition" depends on the conversion of typical rat-*Gongylonema* into typical ruminant-*Gongylonema* by a single change of host. Supposing that the species are really distinct, many generations in the new host might reasonably be expected to be required to bring about a definite and recognizable morphological change, and an isolated experiment could hardly throw much light on the question.

Professor Leiper goes on to argue from the result of his own experiment that "it appears probable therefore that the other species, viz., *Gongylonema pulchrum* of the pig, regarded by Baylis as identical with *Gongylonema scutatum* of sheep and cattle, may prove also to be distinct." This conclusion may be "probable," but surely Professor Leiper is not entitled to assume it, as he later apparently does, as an established fact. A recent, and as yet unpublished, experiment of my own has shown that it is not impossible (as appeared likely from an earlier, unsuccessful, attempt) to infect pigs with the *Gongylonema* of ruminants. This, I think, lends no support to the theory of distinctness of species, but tends rather in the

diminishing. Many villages in Derbyshire where goitre was formerly endemic are now goitre-free—for example, Youlgreave and Beeley, to mention only two examples. In places where it formerly existed and where it exists at the present time it is neither so prevalent nor so severe in its endemicity. This diminution is due to improvement of water supplies. I see that Dr. Milligan supports the opinion that pollution of water supplies is, when the evidence is balanced, the likely cause, but McCarrison, in a paper published in April of this year, stated that he had been able to produce in pigeons and rats colloid goitre by the administration of excess lime in the diet over a period of eight months. I have produced goitres in animals by feeding them on cultures of micro-organisms isolated from a water supply in this county, but these goitres were of hyperplastic type and had no resemblance to colloid goitre as seen in adults living in that district. The distribution of goitre in this county shows how closely it is related to places situated either on the carboniferous limestone, or on other geological formations, but deriving their water supply from this formation. In the Ashbourne area goitre was and is still much more frequently seen to the north on the limestone than to the south on the trias. It is likewise much less commonly seen in places deriving their water supply from the millstone grit, of which Buxton is an example. More than one doctor who practises in regions composed of both millstone grit and carboniferous limestone has assured me that goitre is much more commonly seen on the latter than on the gritstone. The view that endemic goitre is seen only in hilly districts far from the sea is not correct. I have observed it to be common in villages to the south of the Lincolnshire wolds, and I am assured by many, well acquainted with the particular district, that it is of frequent occurrence in Bourne. None of these places is far from the sea, neither is any one of them in any sense protected by ranges of high hills from sea breezes.

Information derived from statistics of goitre in childhood alone is misleading; I have observed that many of the slight "goitres" seen so commonly in childhood disappear spontaneously. Goitre statistics based on the examination of school children alone are valueless; and as in many cases the swellings are small and trivial and have no title to be classed as goitre, many observers would miss them altogether. This is undoubtedly the reason for the enormous variation in the incidence of goitre in childhood seen in statistical tables. The incidence of goitre among children in Wirksworth, where it is said to be high, bears no resemblance to the incidence in adults in that area, where it is comparatively low. Moreover, goitre is said to be absent in children in the town of Melton Mowbray, but it is prevalent among adults, and I was recently informed by a practitioner in that town that since the introduction of a new water supply of a very calcareous nature it has increased. There are a large number of women in this county who have very slight and trivial thyroid enlargements, but in many places not more so than I have observed in London or other places which are reputed to be non-goitrous. The majority of these can only be classed as physiological, for they are not seen nearly so commonly after 25 years of age, and in many people are observed during menstruation only. This class of physiological goitre, apparently, has nothing to do with locality, distance from the sea, or water supply; neither can it be said to be in any way related to endemic goitre as I observe it in Derbyshire and in other counties.—I am, etc.,

PHILIP H. J. TURTON, M.D.

Heanor, Derbyshire, Aug. 31st.

SIR,—In the discussion on goitre in childhood (August 28th, p. 373 et seq.) no reference was made to the possibility that the enlargement of the thyroid is secondary to the commencing of menstrual life in girls. I concluded a good many years ago that there was a very definite connexion. Enlargement of the thyroid is relatively common in girls of about 13, the age when menstruation begins. Dr. Milligan's figures show that goitre is more common in girls, and that it is far more common in girls of 13 years of age than in younger children. It would be interesting if he would examine the affected children a few years later and note the results. I feel very confident that a large number of the goitres would have disappeared—that is, the enlargement is physiological rather than pathological in a good many cases. Organotherapy is still very largely an unknown field, but all the evidence goes to show that the various ductless glands act and react on one another, and that there is a definite sympathetic interaction between the thyroid and the sexual glands.

I have found enlargement of the thyroid a rarity in boys, but in their case the proper age to look for corresponding signs would be two years later—that is, at about 15 years of age—because the sexual development in boys is about two years later than in girls.

During commencing menstrual life girls are frequently nervous and emotional, and this is probably due to temporary hyperthyroidism. No doubt goitres can be caused by external agents, but the fact that they are found most commonly in girls during a very trying sexual period is suggestive that internal conditions may be an important, if not a fundamental, causative agent in many instances.—I am, etc.,

Birkenhead, Aug. 30th. D. J. GAIR JOHNSTON.

OBSTRUCTION AT THE VESICAL OUTLET AFTER PROSTATECOMY.

SIR,—Mr. Ainsworth-Davis, in his letter in your issue of July 31st (p. 226), wrote that in his experience perurethral removal of the prostate is "never" followed by contraction, yet in the JOURNAL of August 28th (p. 403) he writes that he follows up all cases of prostatectomy, using the cystoscope to anticipate any possibility of post-operative obstruction. If his first statement is correct, routine cystoscopy for the purpose mentioned would appear to be an unnecessary precaution. Passing a cystoscope to determine whether there is contraction at the vesical outlet resembles the use of a sigmoidoscope to detect an anal stricture. Personally I have never experienced any difficulty in finding an opening if the patient can "micturate naturally," in spite of Mr. Ainsworth-Davis's experiences.

Both he and Mr. Loughnane advocate routine packing of the prostatic cavity. I worked under Sir John Thomson Walker and Mr. Pardoe over a period of several years, but cannot remember either of them packing a single uncomplicated case. To adopt such a method indiscriminately is primitive and against all the principles of surgical pathology. An article in the current number of the *British Journal of Surgery* deals with the unsuitability of gauze-packing in these cases.

Mr. Loughnane says that an opening into the bladder can always be seen with the urethroscope, but sometimes there is no opening.

Treatment of contraction after prostatectomy by dilatation is probably as old as the operation itself. Sir John Thomson Walker described the unsatisfactory results of this procedure in the *Lancet* for May 14th, 1921.—I am, etc.,

London, W., Sept. 4th. W. K. IRWIN.

INTESTINAL DIVERTICULA.

SIR,—In the article by Dr. E. I. Spriggs and Mr. O. A. Marxer on intestinal diverticula (BRITISH MEDICAL JOURNAL, January 23rd, 1926, p. 130), all diverticula of the small and large intestine are treated as pathological, no matter what their size or etiology, or whether they cause pathological symptoms. No distinction is drawn between the diverticula due to developmental faults and those arising from disease of the potential food pouches, which occur in numbers along the inner wall of the large intestine.

These food pouches or crypto-saks (if I may be permitted to coin a word from the Greek descriptive of them) are mentioned in my book, *The Ileocaecal Valve* (1914). They are not visible, looking into the bowel during life or after death. The crypto-saks are caused by the purse-string action of muscular fibres, which, on their contraction, form a pouch or sac, into which semi-fluid faeces are drawn and where they became inspissated. In the living

MEDICAL DEFENCE.

SIR,—Recent correspondence in the JOURNAL emphasizes—if such emphasis were needed—the unsatisfactory position in which practitioners still find themselves as regards legal protection from attack. Possibly if the North of England Branch had utilized its fullest endeavours at Bath in support of the Warrington and St. Helens recommendation that the Association itself should provide legal protection for its members, we would have been well under way for comprehensive assistance, with a speedy remedy if delay took place.

I would respectfully suggest that at Edinburgh the Divisions of Newcastle and Sunderland should have on the agenda a considered instruction to Council to proceed with an optional scheme forthwith. They will receive strong support from Lancashire.

If pharmacists can receive from their association legal assistance for all difficulties—including even divorce—why cannot the British Medical Association provide similar facilities for its members?—I am, etc.,

Manchester, Aug. 30th. JOHN D'EWART.

SIR,—Dr. Woods, General Secretary of the London and Counties Medical Protection Society, Ltd., writes (August 28th, p. 405):

"Dr. Murray has evidently not seen my letter which appeared in your issue of April 17th, in which it is explained that this society has for many years protected, and still does protect, its members in respect of locumtenents."

In order to appreciate the true value of this statement in relation to the whole problem it will be necessary to repeat the classification of my last letter.

1. A member of either society may be covered for his own acts or omissions.
2. A member of either society may be covered for the acts or omissions of his assistant, locumtenent, house-surgeon, or other subordinate medical officer who is also a member of either society.
3. A member of the Medical Defence Union, Limited, may be covered for the acts or omissions of his locumtenent who is not a member of either society.
4. A member of the London and Counties Medical Protection Society, Limited, will not be covered for the acts or omissions of his locumtenent who is not a member of either society.
5. A member of either society will not be covered for the act or omission of an assistant, house-surgeon, or other subordinate medical officer who is not a member of either society.
6. A member of either society will not be covered for the acts or omissions of a nurse or other lay person acting on his instructions.

The question at present being considered is the cover afforded for a locumtenent. There is no dispute about paragraph 2 where the locumtenent is a member of either society.

Paragraph 3 will not be disputed, for the Medical Defence Union, Ltd., made this concession the subject of a special resolution, and the effect of that was published in the BRITISH MEDICAL JOURNAL a few months ago. The whole question arising out of Dr. Woods's letter is one of the truth of paragraph 4. Dr. Woods may rest assured that we have read his letters very carefully and have failed to get any positive evidence that his society has come into line with the Medical Defence Union on the point of covering a principal for the acts or omissions of a locumtenent who is not also a member of either society. I have before me a letter from Dr. Woods, dated February 23rd, 1926, wherein he has very carefully stated the position of his society on several matters, and I will quote the paragraphs relevant to this point.

"1. That a principal may be held legally responsible for the acts of his assistants or locum.

"2. That if the principal was a member of a medical defence society and his locum or assistant was not, the defence society would not as a rule defend the principal in the event of an action being brought against him on account of the acts of the assistant, but in the case of a locum might defend the principal."

This is Dr. Woods's own explanation of the policy of his society in greater detail than his letter, and there is no evidence that his society has moved from this very uncertain position. So long as these gaps exist in the protection afforded to a member for the acts of his locumtenent so long must paragraph 4 stand as a true statement of the position.

Dr. Woods's letter is quite true, so far as it goes, but does not give the whole of the case. Let him state in unequivocal terms that his society has come into line with the policy of the Medical Defence Union as set out in paragraph 3, paragraph 4 may then go, and paragraph 3 will apply to both societies. I wish to emphasize the point that Dr. Woods's letter only refers to paragraph 4 of the classification, and the rest stands at this date uncontradicted.

There is a danger that this plain writing may give the societies the impression that we are out on a policy of ruthless destructive criticism. The position is not so. We are all deeply grateful for the help of the societies in the past, and we are now doing our best to get all men to join one or other of the societies. We are anxious that the protection should be complete, and we would much prefer that the old societies should realize the limitations of their present protection and give us what we want. If, however, they absolutely refuse, and persist in trying to persuade us that margarine is butter, we will be forced to go elsewhere.—I am, etc.,

R. H. DIX,
Honorary Secretary, Sunderland Division,
August 30th. British Medical Association.

SIR,—Dr. R. H. Dix's letter in the BRITISH MEDICAL JOURNAL of August 28th (p. 404) gives expression to his dissatisfaction at the present position of medical defence. I think he does not fully appreciate the actual position. According to him a complete and comprehensive cover of the legal liabilities of a doctor arising from the practice of his profession is not afforded by membership of any one of the defence societies. In a certain sense, of course, this is true. No society pays for the preparation of partnership deeds and the like for its members, not to speak of the hire, etc., of motor cars, all of which may be regarded as legal liabilities arising from the practice of the profession. The cover is, I believe, nearly as complete as is practicable, and is, moreover, very much better than if an extended and apparently larger cover was expressed in the terms of a policy. Very many cases which involve heavy expenditure are taken in hand for members of the society which could hardly, by any ingenuity, be brought within the terms of a practicable insurance policy. The discretion possessed by the societies is of greater use in enabling them rather to defend members in cases outside the limits of their scope than to decline to defend their members. Dr. Dix says that he and others had thought that "all our burdens would be borne by the society to which we belonged." This seems to indicate the loose way in which the matter is regarded, as it is out of the question that any society could bear all the burdens of its members, and it would be well if there was some exact definition as to what was intended to be included in "all our burdens."

Dr. Dix gives a categorical statement of the limits he regards as applying to the protection afforded by the societies. The limits which actually exist are given in the memorandums of association of the societies, which are wide enough to cover any protection which anyone well acquainted with the subject would think of being given. As regards the present protection of the societies, Dr. Dix's statement should be altered as follows:

1. A member of either society is covered for his own acts or omissions subject to the articles of association of his society.
2. A member of either society is covered for the acts or omissions of his assistant, locumtenent, house-surgeon, or other subordinate medical officer who is a member of the other society.
3. A member of the Medical Defence Union, Limited, is covered for the acts and omissions of his locumtenent who is not a member of either society.
4. A member of the London and Counties Medical Protection Society, Ltd., is covered for the acts and omissions of his locumtenent who is not a member of either society.
5. A member of either society may, or may not, be covered for the acts or omissions of his assistant, house-surgeon, or other subordinate medical officer who is not a member of either society.
6. A member of either society is, at the discretion of the society, covered for the acts or omissions of a nurse or other lay person acting on his instructions within the scope of the society.

Dr. Dix seems to complain that the societies are not under such compulsion as to compel them to take up every case that comes before them. In the absence of a strictly drawn policy the taking up of cases without any discretion on the part of the councils of the societies would involve

reverse direction. It is, of course, open to Professor Leiper to regard the naturally occurring pig and ruminant forms as separate physiological races or strains—a matter which, so far as I can see, feeding experiments are never likely to settle. But unless he can find some morphological distinction which, for my part, I have failed to detect, he is not on safe ground in asserting that they are distinct species.

Throughout Professor Leiper's paper it appears to be assumed that, as the *Gongylonema* of rats is the only species yet definitely implicated in cancer causation, other extremely closely related species need not be considered. The reason for this assumption is not clear to me. The purely negative statement (p. 60) that "none of the Gongylonemas found in domestic stock are associated with the occurrence of cancer in these animals, nor has cancer been observed in any of the cases in which Gongylonema has hitherto been recorded in man" may be, up to the present, perfectly true, but it is not conclusive.

Although no evidence is produced by Professor Leiper to prove his contention that *G. pulchrum* and *G. scutatum* are not identical, he propounds some remarkable conclusions, including the following:

(1) That "*Gongylonema pulchrum*" does not occur at Villa Lagarina (cf. p. 59: "Practically all the local cattle slaughtered in this district were found infected with Gongylonema"). As Professor Leiper has not investigated Villa Lagarina himself, he is presumably relying upon statements of my own.

(2) That "*G. scutatum*" has not yet been found in man (cf. p. 59: "it is evident that Gongylonema in man is the species which normally occurs in pigs").

—I am, etc.,

H. A. BAYLIS.

British Museum (Natural History), London, S.W.7, Aug. 19th.

We referred this letter to Professor Leiper, who writes as follows:

SIR,—The reader will be assisted in understanding the above argument if it be made clear that Dr. Baylis differs from other observers, including myself, who regard the gongylonema worms of swine, ruminants, and rodents as belonging to at least three distinct species, named respectively *G. pulchrum*, *G. scutatum*, and *G. neoplasticum*, and has taken the position that *G. scutatum* is merely a synonym of *G. pulchrum*; tentatively—now "very" tentatively—suggesting also that *G. neoplasticum* may have to be added.

Wherever in my report *G. pulchrum* appears it refers to the gongylonema of swine, and *G. scutatum* refers to the gongylonema of ruminants. Applying, however, his own terminological usages (or, as I view them, nomenclatural inexactitudes) to my report, Dr. Baylis arrives, on my behalf, at some "remarkable conclusions." The statement that *G. pulchrum* does not occur in Villa Lagarina, referring obviously to gongylonema of swine, and based upon the failure of the Cancer Field Commission to reveal its presence by an intensive study of the problem in this village, is not invalidated by a further quotation that "practically all the local cattle slaughtered were found infected with Gongylonema"; for these cattle harbour *G. scutatum*. Nor is the statement that *G. scutatum* has not yet been found in man—referring, of course, to the gongylonema of cattle—invalidated by a quotation "Gongylonema in man is the species which normally occurs in pigs."

Dr. Baylis rightly assumes that I accept the results of his own examination of Alessandrini's material as showing that this gongylonema was merely a case of accidental infection of man with *G. pulchrum* of swine, which was, moreover, as in its normal host, unaccompanied by any cancerous reaction. This determination justifies the conclusion that, so far, "no case of *G. neoplasticum* had been found in man," and thus supports my contention that there is not the slightest scientific foundation for Dr. Sambon's belief that gastric cancer, stated to be very prevalent in certain houses in some villages in northern Italy, is due to invasion with a gongylonema associated with the presence of rats and cockroaches in these so-called "cancer houses."

Dr. Baylis complains that, with a small direct grant from the same body which indirectly but lavishly financed the commission to which he became attached, we tried to carry out the very experiment he was himself performing. But he has forgotten two points of some interest—namely, (*a*) these grants were made at the same time (to the knowledge of Dr. Baylis before he left England) with a wisdom and purpose I do not need to concern myself to discuss. (*b*) The need for such independent investigation arose, not only from his own work, but was actually publicly suggested by him some months previously on two separate occasions in a paper published on February 2nd, 1925. On page 73 he wrote:

"But unless, and until, it can be experimentally proved *by those in a position to undertake such investigations* [italics are mine] that the form found in one host cannot be transmitted to another host there appears to be no alternative but to regard all these forms as belonging to one and the same species."

And again on page 75, writing on the difficult question as to whether *G. neoplasticum* should be considered a distinct species or not, he remarks:

"It appears to depend upon the importance to be attached to a single character limited to the male sex, viz., the length of the left spicule. Many helminthologists would doubtless consider this quite sufficient to constitute a 'good' species. The writer feels, however, that in view of the amount of variation possible in the forms from other hosts and until a much larger number of males of *G. neoplasticum* has been examined the evidence is rather strongly in favour of specific identity. This view does not, of course, exclude the possibility of the existence of a 'host-race' or even an incipient species confined to rodents. As in the other cases previously discussed, *the question calls for careful experimental investigation by those able to undertake it.*"

Incidentally, it may be remarked that the above gives Dr. Baylis's own words, a précis of which he submits (in the first section of his second paragraph). I will merely ask the reader to compare these two statements.

Although Dr. Baylis claims that we have merely repeated his experiments—the nature of which, by the way, was unknown to us until months later—the purpose in his mind and in ours appears to have been different. That an animal can become infected under experimental conditions although it is never found so infected in nature is a common experience. The fact of successful experimental infection is of somewhat small significance. What is significant is that in the case of *G. neoplasticum* the slight but specific characters remain entirely unchanged, even when the parasite is experimentally reared in sheep. I see no reason to assume that if this species were carried on through several generations in sheep any morphological change should necessarily be in the direction of *G. scutatum*, or to assume that if man became accidentally infected in a rat-infested house the gongylonema found should fail to present the slight peculiarities characteristic of *G. neoplasticum*.

This, as Dr. Baylis affirms, is my chief constructive contribution, but it suffices to warn me against a placid acceptance of his concept of what constitutes a species. Of course, he is fully entitled to his own concepts, and little harm can result from their application to the National Collections. But the acceptance of a ruling, or the adoption of a tentative suggestion concerning the identity of a parasite in different hosts, if one of these hosts be man, is for the medical man not merely an interesting nomenclatural decision. It may raise new and serious problems in the control and prevention of disease. Dr. Baylis does not, apparently, realize the responsibility involved in the publication from the British Museum of an opinion such as the following:

"If, as has been suggested, all these species are identical the fact has very interesting and important bearings upon human pathology." . . . "These domesticated animals—sheep, goats, cattle, and pigs—will have to be considered as important reservoirs of the parasite, and, if Dr. Sambon's theory receives confirmation, as factors in the spread of carcinoma."

Dr. Baylis states that as the gongylonema of rats is the only species yet definitely implicated in cancer causation I appear to assume that other extremely closely related species need not be considered. To this the reply is that until evidence is forthcoming of the association of any species of gongylonema with cancer in man, direct or indirect suggestions that it is so are both worthless and pernicious; for they engender in the public mind false hopes that in the control of the reservoirs and intermediaries of gongylonema lies a solution of the problem of human cancer.—I am, etc.,

R. T. LEIPER.

London, N.W.11, Sept. 7th.

Obituary.

JOHN GEORGE ADAMI, C.B.E., M.D., F.R.S.,

F.R.C.P., F.R.C.S., HON. D.Sc., LL.D.,
Vice-Chancellor of the University of Liverpool; late Strathcona Professor of Pathology, McGill University, Montreal.

THE death of Dr. J. G. Adami on August 29th removes one who played a prominent part in pathology and medical education.

Coming originally of Italian descent, his ancestors had for several generations been medical men, but not his father. John George Adami, the fifth child and eldest surviving son, was born on January 12th, 1862, at Manchester, and had the same christian names as his father; his mother, Sarah Ann Ellis Leech, daughter of Thomas Leech of Urmston, Lancashire, was a sister of Dr. Daniel John Leech (1840-1900), professor of materia medica and therapeutics in the Victoria University and physician to the Manchester Royal Infirmary. The Adami family lived in Manchester and Ashton-upon-Mersey, and George received his early education at Owens College. His medical life may be divided into four periods: the first in Cambridge, as undergraduate, demonstrator of pathology, and John Lucas Walker Student in Pathology (1880-92); the second in Montreal as professor of pathology (1892-1914); the third when, during the war, he served with the Canadian Army Medical Corps in Europe (1915-18); and the fourth when he was vice-chancellor of the University of Liverpool (1919-26).

Photograph by] [Lafayette, Manchester.

J. GEORGE ADAMI, C.B.E., M.D., F.R.S.

Adami went up to Christ's College, Cambridge, in 1880 at the same time as his life-long friend Arthur Everett Shipley, Master of the College since 1910, to whom he dedicated his *Principles of Pathology* in two volumes. He was a scholar and Darwin prizeman (1885) of the College, and in 1920 was elected an Honorary Fellow. As an undergradute he was an active member of the Cambridge University Natural Science Club, being elected on August 6th, 1881, at the same time as A. E. Shipley; he read three papers—on "Rudiments in man," "The thymus," and "Medical degrees"—before he took his degree. He obtained a first class in Parts I and II of the natural sciences tripos in 1882 and 1884, taking physiology as his subject in the second part, and being in both years in the same class as A. E. Shipley and Henry Head. W. Bateson and Sherrington were a year senior to him, so there were giants in his time. He then worked for eight months at Breslau in Heidenhain's laboratory on the blood supply of the frog's kidney, and by careful experiments showed that it was impossible by ligaturing the renal artery to deprive the glomeruli of blood (*Journ. Physiol.*, Cambridge, 1885, vi, 382), thus controverting Nussbaum's earlier statement. After doing his clinical work at Manchester, where he was under the eye of his uncle, the late Dr. D. J. Leech, and being house-physician for six months at the Manchester Royal Infirmary under Drs. Morgan, Dreschfeld, and Ross, he returned to Cambridge in April, 1888, as demonstrator of pathology to Professor C. S. Roy, following, after a short interregnum, Sir Almroth Wright, who had held this post for a brief period. With Roy, a disciple of Cohnheim and a genius in experimental work on the border-line between physiology and pathology, he did a large amount of research on the cardio-vascular system, as is shown by a series of contributions, such as the opening paper in the Pathological Section at the Glasgow meeting of the British Medical Association, on "Failure of the heart from overstrain" (BRITISH MEDICAL JOURNAL, 1888, ii, 1321). In this communication reference was appropriately made to the observations of Clifford Allbutt, who at this meeting delivered the address in medicine, on his own sensations when overcome in the Alps. Roy and Adami wrote:

> "Of acute overstrain of the heart from intense muscular exertion, one of us (R.) has on one occasion had personal experience: when, during convalescence from typhoid, he found himself called upon as a medical man to make a fatiguing and rapid journey over the Mer-de-Glâce to the 'Jardin' to attend to a Chamouni guide. . . . The sensations felt were well described by Clifford Allbutt, with those observations on overstrain of the heart our own results fully coincide. . . . With regard to the objective phenomena, it did not occur to the one of us personally involved in this matter to percuss out his heart, as was done by the more intelligent Clifford Allbutt, who found the area of dulness increased; but such characteristics of the condition as are appreciable to the non-medical eye led the injured guide in question to remark 'Mais vous êtes essoufflé, Monsieur, il faut prendre du cognac.'"

This short excursus is perhaps admissible from its interest concerning three distinguished teachers in the university, although Allbutt was not to take up his work there until 1892. This paper, like those in the *Practitioner* (1890, xllv and xlv), the JOURNAL (1892, i, 455), and the more detailed memoirs in the *Philosophical Transactions* (1893, clxxxiii, 199-298), and *Proceedings of the Royal Society* (1891-92, 1, 435), contained a number of tracings. Adami, however, was busy in other directions besides teaching and collaborating with Roy; he wrote on the functions of the glomeruli of the kidney and albuminuria (*Practitioner*, 1889, xliii, 241), and in 1889 had a curious experience which might have been very serious, as he related in "Notes on an epizootic of rabies with a personal experience of M. Pasteur's treatment" (BRITISH MEDICAL JOURNAL, 1889, ii, 808). In investigating an epidemic rapidly killing off the fallow deer in Ickworth Park, which had been assumed to be anthrax but was subsequently shown to be rabies (*Ann. Instit. Pasteur*, Paris, 1889, iii, 658), he cut his finger during a necropsy on a deer; though thinking little of this accident, he went, on the urgent advice of Roy, to the Pasteur Institute in Paris for treatment, and then began to suffer from insomnia, depression, tingling in the limbs, and finally from difficulty in swallowing. Of the two alternatives—an abortive attack of hydrophobia or a nervous condition due to auto-suggestion—he inclined to the second interpretation. In 1890 he was appointed John Lucas Walker Student in Pathology, and, continuing his experimental work, brought out a number of shorter papers—for example, on pseudo-tuberculosis due to a minute nematode (*Med. Chron.*, Manchester, 1890-91, xii, 466), on immunity (*ibid.*, 1891-92, xv, 95, 151), and on the variability of bacteria and the development of races (*ibid.*, 1892, xvi, 366), a subject he returned to on several occasions.

very grave risks of serious disputes and costly litigation, since some members are apt to expect defence in matters that do not at all come within the scope of the societies. Moreover, it would be objectionable for the councils to defend a member who has deliberately persisted in criminal conduct or conduct involving serious legal penalties. I am quite convinced that the discretion which the societies have very wisely given to their councils by their articles of association are altogether in the best interests of the members; not restricting the benefits but greatly extending the scope of the societies.—I am, etc.,

HUGH WOODS,
General Secretary, London and Counties Medical Protection Society, Ltd.

London, W.C.2, Sept. 3rd.

NOTIFICATION OF PUERPERAL FEVER OR PYREXIA.

SIR,—We have read the article in your issue of August 21st (p. 356) in reference to the Minister of Health's amended regulations relating to the notification of puerperal fever, etc. Whilst agreeing that in the past many cases of uterine sepsis have not been notified, we should like to point out that if cases of pyrexia only are notified a large number of patients with uterine sepsis will go untreated.

After a long experience we are convinced that the cases of sepsis which produce a raised temperature are in the minority. We think that there is another most important sign of sepsis in the early puerperium, and that is the persistence of the red lochia. If attention is not paid to this sign and treated, and if Nature does not do its work, many patients return to hospital for treatment.—We are, etc.,

REMINGTON HOBBS.
MARY R. LEVACK.

St. Mary Abbots Hospital, Marloes Road, Kensington, Sept. 4th.

SUBACUTE APPENDICITIS.

SIR,—The object of this letter is to stress the fact that there is a subacute insidious form of appendicitis which, independent of any previous appendical storm, does not give rise to any local manifestation, but frequently induces symptoms which point to ulceration of duodenum or stomach. In my experience radiological revision in some cases of this occult form of appendicitis is not reliable in that it not infrequently indicates some gastric perturbation which I find may be compatible with either lesion.

In regard to the diagnosis of this type of appendicitis I know of only one genuine sign: distinct localized pain and tenderness (often accompanied with reflex pains) on deep digital pressure over Munro's point—namely, just at the outer edge of the right rectus muscle in the line passing from umbilicus to anterior iliac spine.

In instances in which similar definite localized pain and tenderness can likewise be elicited on digital palpation in gastric or duodenal areas the diagnosis becomes obvious—a dual lesion, which is quite a common coincidence; the moral is not to omit to examine the appendix when operating for gastric or duodenal ulcers. This treacherous type of appendicitis is constantly associated with obvious inflammation and hypertrophy of the adjoining segment of the ileum, with, as often as not, formation of a deadly dense inflammatory adhesion which binds down the gut in V fashion in the right pelvic dip.

The pathology of this complication does not strain imagination if one briefly visualizes the distribution, and connexion, of the lymphatic vessels of the appendix and ileum, not to add the proofs which have been demonstrated of infection ascending from former to latter. The peristaltic strain involved in forcing material into a caecum bound down by an adherent appendix must necessarily result in some hypertrophy of the muscular coat of the small gut; the discoloration of the involved segment, and nature of adhesions so frequently encountered in the ileo-caecal angle and beneath the last few inches of ileum, clearly indicate infective participation.

For years past I have made it a rule when operating for appendicitis not to quit the abdomen without carefully inspecting the distal ileum, and have been rewarded by finding, in at least 30 per cent. of cases, an adhesion, which, if unobserved, would in all probability ultimately have caused acute intestinal obstruction. It is almost superfluous, nowadays, to add that it appertains to the septic past to open any clean abdomen without taking due stock of its contents.

In conclusion. I find the incidence of this subacute form of appendicitis so constantly associated with diseased teeth that I beg leave to repeat the recommendations—(1) have obviously decayed teeth extracted, (2) do not have any tooth filled or crowned without *x*-ray examination of its roots and socket, and (3) in all cases of diagnostic perplexity, and pains and swelling of the "rheumatic" type, irrespective of an apparently "perfect set," have the teeth *x*-rayed.—I am, etc.,

JOHN O'CONOR.

Buenos Aires, June 1st.

WEEDS, CANCER, AND ACIDITY.

SIR,—Anent the suggestions of Dr. A. Mackenzie on the above subject, I beg to call attention to the remarks of Joulie with respect to hyperphosphatic and hypophosphatic patients—namely, that he has never met with cancer associated with hyperphosphatic urine as defined by him in his method, and he therefore recommends the examination of the urine, for this condition to be secured, for those who have been operated on for cancer. It is ever the hypophosphatic urine which is associated with cancer.—I am, etc.,

J. BARKER SMITH, L.R.C.P.

London, S.E.24, Aug. 29th.

Universities and Colleges.

UNIVERSITY OF CAPETOWN.

AT the graduation ceremony held in July the following were admitted to the degrees of M.B., Ch.B.:

S. Goodman, S. S. Hoffmann, J. Hotz, J. I. Lipschitz, B.A., W. Milne Murray.

The Services.

KING'S HONORARY SURGEON.

THE KING has been graciously pleased to approve of the appointment of Colonel Frederic Hibbert Westmacott, C.B.E., T.D., F.R.C.S., Assistant Director of Medical Services, 42nd (East Lancs) Division, T.A., to be Honorary Surgeon to His Majesty, in succession to Colonel E. C. Montgomery-Smith, C.M.G., D.S.O., T.D., M.D., retired.

BLANE MEDAL.

SURGEON LIEUTENANT COMMANDER STEWART R. JOHNSTON, R.N., has been awarded Sir Gilbert Blane's Gold Medal, he having obtained a first-class certificate at the examinations held in 1926 for promotion to the rank of surgeon commander.

DEATHS IN THE SERVICES.

Lieut.-Colonel Walter Frederick Hamilton Vaughan, R.A.M.C. (ret.), died at Bridgwater on August 26th, aged 47. He was born on March 1st, 1879, the son of W. Filener Vaughan, Esq., educated at St. Mary's, and took the M.R.C.S. and L.R.C.P.Lond. in 1901. After acting as resident senior medical assistant at Marylebone Infirmary, Notting Hill, and as clinical assistant at Leicester Infirmary, he entered the R.A.M.C. as lieutenant on January 30th, 1904, and became major on July 1st, 1915. He was placed on half-pay, on account of ill health, on August 9th, 1920, and in his subsequent retirement was granted the rank of lieutenant-colonel.

Lieut.-Colonel John Oldfield Greatrakes Sandiford, R.A.M.C.(ret.), died on July 11th. He was born on May 11th, 1854, educated at Queen's College, Cork, and graduated M.D. and M.Ch. in the Queen's University, Ireland, in 1877; he took the L.A.H.Dubl. in the same year. He entered the army as surgeon in 1880, became lieutenant-colonel after twenty years' service, and retired in 1901.

Surgeon Captain John Charles Groscort Reed, R.N.(ret.), died at Salisbury on August 2nd, aged 53. He was educated at Guy's, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1896. He entered the navy in May of that year, became staff surgeon in May, 1912, and retired in 1923, with an honorary step in rank as surgeon captain. He served in the China war of 1900 as surgeon of H.M.S. *Algerine*, when he was present at the capture of the Taku Forts and the relief of Tientsin (medal with clasp). When the recent war began in 1914 he was serving at Bermuda, but during the last two years of the war was senior medical officer of the battleship *Wanderer*, in the Grand Fleet.

and disease to the first edition of Osler and McCrae's *Modern Medicine* (1907, i, 17-50) was a valuable summary of a subject of which he had long taken an independent view, and to which he returned ten years later in his Croonian Lectures before the Royal College of Physicians of London. In the second and the present third edition of this *System*, which were cut down to a smaller bulk, Adami's article, together with other general articles, was sacrificed. He became a Member of the Royal College of Physicians of London in 1910 and a Fellow in 1915; he gave the Croonian Lectures in 1917 on "Adaptation and disease," in which he argued with much skill and many illustrations against the biological doctrine that acquired characters are not transmitted; he thus became involved in a rather vigorous controversy with Sir E. Ray Lankester. These lectures, under the title *Medical Contributions to the Theory of Evolution*, were, with a number of previously published papers dating back to 1892, brought out the following year in a book which was reviewed in the JOURNAL (1918, i, 619) by the late Sir William Bayliss.

Both as a writer and a speaker Adami had a graceful and attractive style, and, whatever the actual truth may have been, they seemed, especially speaking, to come easily and without the effort that most of us experience, for he had a light hand and a saving grace of humour. As has been shown, he covered a very wide field and was much in request, particularly in his Canadian period, for addresses. He was very happy in his biographical and historical essays—for example, in "The Edinburgh tradition" (1900); "Sir John Harington" (1908); "A great teacher (Sir Michael Foster) and his influence" (1910); "Charles White of Manchester (1728-1813) and the arrest of puerperal fever," the Lloyd Roberts Lecture, Manchester Royal Infirmary, 1921; and his two articles in the recent Memorial Number of the *Bulletin* of the International Association of Medical Museums (1926) on Sir William Osler, that entitled "Last days" being particularly fine in feeling and human touch.

While the most optimistic and genial of men and never speaking evil of others, he was very independent, was no mean fighter, and spoke out fearlessly when he felt it his duty, as was shown by his address on venereal disease among the dominion and colonial troops entitled "The policy of the ostrich" (BRITISH MEDICAL JOURNAL, 1919, i, 68). He was always extremely open-minded in investigating any new idea which might be brought to his notice, and in sympathetically encouraging research of any promising point, especially when support was not freely forthcoming elsewhere. Thus in 1916 he pleaded generously for more consideration and recognition of the late E. C. Hort's work and conception of the complex life cycle of bacteria, and more recently he supported and supervised Dr. W. Blair Bell's views on cancer and the treatment by lead. He indeed intended, on his retirement next year from the vice-chancellorship on account of the age limit of 65, to devote his energies to the latter subject.

He had many outside interests, especially in art and music; he had an extensive knowledge of Continental picture galleries, had exhibited his own water-colours, made fine collections of drawings and china, and composed an anthem, "Lighten our darkness." In 1924 he wrote for the Anglican Evangelical Group Movement a pamphlet (No. 51), "The unity of faith and science."

Numerous honours came to him; he was elected F.R.S. in 1905 and was subsequently on the council, he was awarded the C.B.E. for his war services in 1919, was an LL.D. of three universities, and received the honorary D.Sc. on the celebration of the bicentenary of Trinity College, Dublin, in 1912. He was created a Fellow of the Royal College of Surgeons of England (1919), and an Honorary Fellow of both Jesus and Christ's Colleges, Cambridge, in 1920. The Medical Society of London awarded him the Fothergillian Gold Medal in 1914.

For more than two years he had courageously fought the progress of a disease of which he, more than most medical men, must have known the inevitable end, and with ups and more downs in its course, had successfully carried on his work almost to the end. He took an active part at the Cambridge meeting of the universities of the British Empire, July 12th to 16th, and on July 23rd opened the discussion, in the place of Dr. W. Blair Bell, who was ill, on the nature of malignant neoplasia and their treatment with lead, in the Section of Medicine at the British Medical Association meeting at Nottingham. It will be remembered that at the rather animated discussion of the treatment of malignant disease by lead at the Medical Society of London on March 22nd last, he was prominent in presenting the work done by the team of experts engaged on this research at Liverpool. After the Nottingham meeting he rapidly went down hill and died peacefully at 6.30 p.m. on Sunday, August 29th. He was twice married; to his devoted wife, his daughter, and son the deep sympathy of the profession which he served so long and devotedly will go out.

HUMPHRY ROLLESTON.

OUR LIVERPOOL CORRESPONDENT writes:

The medical profession in Liverpool was justly proud that the vice-chancellorship should be held by a medical man; he was well known to the profession, and on intimate terms with many of its members. His advent to the high office was signalized by a strenuous endeavour to improve the finances of the university. With this object Dr. Adami enlisted the services of the civic authorities, and at all times insisted on the importance of town and gown being united in every good object. He never lost sight of the importance of the university motto—"Haec otia studia fovent." He felt it to be his duty, not only to promote efficiency in the university, but to show that sound knowledge was the basis of human happiness in every path of life. In his multifarious engagements the progress of the university was ever uppermost, and in his addresses at public meetings Dr. Adami always left with his hearers some facts to ponder over. He was a convinced believer in "mens sana in corpore sano," and rather deplored that the students did not take more interest in athletics and physical exercises. He was a great favourite with the students and thoroughly entered into their amusements. He will indeed be sorely missed by the academic youth. As a man Dr. Adami was genial and affable in no slight degree, ready with a quip if occasion offered, and broadminded in his outlook on the world. His after-dinner speeches were always good. He enjoyed life, and always gave the impression that he desired others to do so too. Dr. Adami was an enthusiast in what he undertook, and infected others with a like feeling. We feel in Liverpool that a great light has gone out, a man full of energy has been removed from our midst. Dr. Adami will be indeed missed, not only by the students but by all classes of the community. He was an example of indefatigable energy: "Whatsoever thy hand findeth to do, do it with thy might" might be said to have been his guiding principle.

The funeral service took place on September 2nd at the Cathedral Church of Christ, Liverpool, when the Bishop of Liverpool (the Right Rev. A. A. David, D.D.) gave an eloquent appreciation of the late Vice-chancellor; the interment at Allerton cemetery followed. The university and city will attend a memorial service at the beginning of the Michaelmas term.

The funeral service in the cathedral was most impressive. Its note throughout was one of gratitude for a noble life and eternal hope for all those present. The large congregation contained representatives of the university, the civic authorities, educational establishments, and social and philanthropic institutions. Lord Derby, as chancellor, headed the university representation; the Lord Mayor, accompanied by the leading city officials and merchants, represented the city; and the mayors of several neighbouring municipalities also attended. The Bishop, in his address, touched upon the character and intellect of Dr. Adami. His note was one of praise and thankfulness for that gallant spirit kept bright and high, undimmed by weariness and suffering. To his great gifts of intellectual grasp and penetration, of fine courage in the quest of truth, Dr. Adami added his knowledge and love of man. He saw the best in men and believed in it. That was the secret of the vice-chancellor's happiness and his influence over those with whom he came into contact. The service

He worked for a time at the Pasteur Institute, but returned to Cambridge on being elected a Fellow of Jesus College in 1891, and, having taken the degrees of M.A. (1888) and M.B. (1889), proceeded to that of M.D. in 1892.

In the autumn of 1892 he went to Montreal as Strathcona Professor of Pathology in McGill University, and at once became most actively engaged in teaching, leading, and research in pathology, and continued to do so until after the outbreak of war in 1914; he did not, however, actually resign the post till 1919. In Montreal he was engaged in organizing the university department and directing the necropsies at the Royal Victoria Hospital, and his energies were wisely and widely directed on the broadest lines; he encouraged his pupils and others to do original work in his laboratories, among them being Professors O. Klotz and C. W. Duval, W. W. Ford, G. A. Charlton, and Maude E. Abbott. There was thus a continuous stream of papers from his laboratory dealing with all branches of pathology and its application to other sciences as well as to practice—for example, such diverse subjects as Pictou cattle disease, hepatic cirrhosis, subinfection, the relationship between inflammation and sundry forms of fibrosis (Middleton-Goldsmith Lectures, 1896, Pathological Society, New York), the classification of tumours, retroperitoneal lipomas, exogenous ulceration of the intestines, tuberculosis, myelins (with Professor L. Aschoff of Marburg), heredity of disease, eugenics, town planning, and child welfare. The position he attained is shown by some of the high offices he held; he was president of the Royal Society of Canada (1912), an honour which had not previously been conferred on a pathologist, of the Association of American Physicians (1912), and of the Canadian Association for the Prevention of Tuberculosis (1909-12). After the death of Professor A. A. Kanthack in December, 1898, Adami was obviously the ideal successor to the chair of pathology at Cambridge, and his university friends made this known to him in no uncertain terms There can be no doubt that had he consulted his own wishes he would most gladly have come back, but almost at the last moment unselfish considerations made him withdraw his candidature, and he remained at Montreal, though he was not free from temptations to go elsewhere. He was President of the Section of Pathology and Bacteriology at the Ipswich Meeting of the British Medical Association in 1900.

With the outbreak of war he enthusiastically gave his services unreservedly to this country, and received a temporary commission as colonel C.A.M.C. and Assistant Director of Medical Services in Charge of Records, with headquarters in London. In 1918 he wrote a very readable work, the first volume of *The War Story of the Canadian Army Medical Corps*, which brought the history down to the autumn of 1915, and recorded the outbreak of cerebrospinal fever among the troops on Salisbury Plain soon after their arrival in 1914, and the events during the second battle of Ypres. *The Bulletin of the Canadian Army Medical Corps* (March, 1918, to May, 1919) bears evidence of his activities in articles on the presence of diphtheria and diphtheroid bacilli in wounds, and a detailed report of the enemy air raids upon Canadian hospitals. In 1917 the Medical Research Committee appointed a special committee to report on the standardization of routine pathological methods, consisting of J. G. Adami, Dr. (now Sir) F. W. Andrewes, and Professor W. Bulloch; this committee, of which Adami was the first chairman, was responsible for reports on the Wassermann reaction, the detection of spirochaetes, the laboratory diagnosis of gonococcal infections, and the reaction of media.

In June, 1919, the council of the University of Liverpool unanimously elected him vice-chancellor in the place of Sir Alfred Dale, and he keenly threw himself into the manifold duties of this last phase of a life full of successful endeavour. Entering thoroughly into the routine duties, the social life, and educational problems of all sorts, he was very active on the Consultative Committee of the Board of Education, particularly in connexion with the report on the differentiation of curricula between the sexes in secondary schools (1923), and the report of the inspectors on the visitation of the medical schools of the University of London (1924). In 1923 he had been appointed inspector for the intermediate and final subjects and had as his colleague for the preliminary medical studies Dr. George Senter, Principal of Birkbeck College. Adami carried through the task, which might, in other hands, have been difficult and delicate, of inquiring into the doings and domestic details of the medical schools with tact and sympathy for their post-war difficulties, and wrote an admirable report balancing the relative claims of the large and small schools. But with all this he did not lose touch with his old love pathology, and was active at the Liverpool Medical Institute reading papers on the diphtheroid group of organisms (1920), in which he had taken much interest during the war, on the pathology of influenza (1921), and critically set out the difficulties in accepting Dr. James Young's cancer parasite with a complex life cycle (1925). Before the Pathological Section of the Sheffield Medico-Chirurgical Society he gave, in 1923, a full survey of the 1918 pandemic of influenza in the army, which he had completed two years before but had not then been published.

His great work, *Principles of Pathology*, came out in two volumes, the first on general pathology (pp. 948) in 1908, and the second dealing with special pathology (pp. 1,082), in which he was assisted by Dr. A. G. Nicholls, in 1910, and met with such a cordial reception that a second edition was published in 1910 and 1911. As these two bulky volumes covered more ground than the average student could be expected to master, an admirable *Text-Book of Pathology* (pp. 759) was brought out to meet his needs in 1912 by Adami and the late John McCrae, and rapidly passed into a revised and enlarged second edition (pp. 878) in 1914. A very important piece of work was his article on inflammation in Allbutt's *System of Medicine* (1896, i, 54-139), which was considerably expanded in the second edition of this *System* (1905, i, 702-818), and published separately by Macmillans, passing into a fourth edition (pp. 254) in 1909. In this monograph the wide knowledge of biology and the kindred sciences, for which his Cambridge training was responsible, was obvious. His contribution on inheritance

Medical News.

THE seventh annual lecture conference of the Industrial Welfare Society has opened at Balliol College, Oxford, and will continue until next Wednesday. A lecture on dental service in industry is being given to-day (Saturday) by Mr. H. A. Mahony, secretary of the Public Dental Service Association of Great Britain, and Dr. Innes H. Pearse will speak on the future of preventive medicine in industry on Tuesday afternoon.

AN intensive course in operative surgery at the Central London Throat, Nose and Ear Hospital, Gray's Inn Road, W.C.1, will commence on October 4th, preceded by a preliminary course of six lectures on methods of examination and diagnosis, which starts on September 15th. The syllabus may be obtained from the dean at the hospital.

A SPECIAL two weeks' course in orthopaedics will be given at the Royal National Orthopaedic Hospital from September 20th to October 2nd. The fee is two guineas. The course is open to all post-graduates, and further particulars may be obtained by applying either to the Secretary, Royal National Orthopaedic Hospital, 234, Great Portland Street, London, W.1, or to the Secretary, Fellowship of Medicine, 1, Wimpole Street, W.1.

THE Minister of Health has issued a circular letter (735) to the effect that the Civil Service bonus will be based from September 1st, 1926, on an average cost of living figure of 70. The bonus payable for the six months commencing on this date to officers whose annual salaries do not exceed £500 will therefore be one-eighth less than that paid during the six months commencing on March 1st. Officers whose remuneration from local authorities is subject to the sanction of the Minister of Health are similarly affected.

THE twelfth annual report (for the year 1925) of the International Health Board of the Rockefeller Foundation by the general director, Dr. Frederick F. Russell, gives in greater detail and with admirable illustrations the data summarized in the review of the president of the Foundation, who is also chairman of the International Health Board. In hookworm disease the use of carbon tetrachloride, which is more effective than other means, is, like them, occasionally followed by poisoning, and most often when taken in association with alcohol or by children with *Ascaris lumbricoides*, and gives rise to necrosis of the liver; to diminish the risk it is administered in combination with oil of chenopodium, which is highly effective in removing ascarides. Further evidence has accumulated to confirm Dr. H. R. Carter's conclusion that in South America *Anopheles quadrimaculatus* is the important vector of the malarial parasite. As a result of the increase of malaria in Europe since the war a station was in 1925 established in Corsica to study its epidemiology and train malariologists for work in Europe.

THE Home Secretary gives notice that he has withdrawn from John Symington Stewart, M.B., Ch.B., of 252, Morrison Street, Edinburgh, the authorizations granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and supply raw opium and the drugs to which Part III of the Act of 1920 applies, and has also directed that the exception in Regulation 4 of the Dangerous Drugs Regulations, 1921, which permits dangerous drugs to be supplied on a prescription given by a duly qualified medical practitioner, shall not apply in respect of prescriptions given by Dr. John Symington Stewart. Any person supplying Dr. Stewart with raw opium or any of the drugs to which Part III of the Dangerous Drugs Act, 1920, applies, and any person supplying the drugs on a prescription signed by Dr. Stewart, will be committing an offence against the Acts.

THE annual report of the National Institute for the Blind is a most excellent and interesting statement of the valuable work done by this organization. There is scarcely a single part of the whole range of activity of blind persons in which the institute does not take a leading and directing part. The activities of the institute include the printing of books for the blind, the production of newspapers, the organization of homes for the aged and for blind infants, the two colleges for the higher education of blind children at Worcester and Chorley Wood, and the assistance of blind workers in which the institute takes a large part in co-operation with local authorities. A new and useful feature of the report is a "Who's Who" of the personnel of the executive council of the institute; this might well be copied by similar charitable organizations. Confidence is inspired by frankness of statement. The magnitude of the work may be gauged by the sum total shown in the balance sheet—it now reaches £312,411; the accounts for each branch of the institute's work are set out separately; in many cases they are presented in the form prescribed by the Ministry of Health or the Board of Education, and in all instances they are so clearly stated that the least knowledgeable in financial affairs cannot fail to understand their import. A new form of activity which has engaged the attention of the institute is assistance and advice in the provision of wireless sets for the blind. Broadcasting is one of the most valuable means of bringing the blind into close touch with the life of to-day. Braille newspapers cannot hope to give them all the information that is desirable. A beginning was made in a small way through the thought of some readers of newspapers, and the institute has taken the matter up with enthusiasm; it is aided by technical advisers. For a gift from the sighted to the blind there can be none better than a wireless set, or the putting of the blind person in the way of securing an efficient and simple set for himself.

COURSES of lectures and demonstrations at the Royal Sanitary Institute will commence on October 4th for sanitary inspectors, and on October 8th for meat and food inspectors. Further information may be obtained from the Secretary of the Institute, 90, Buckingham Palace Road, S.W.1.

ACCORDING to the Health Office of the Swiss Confederation the epidemic of small-pox in Switzerland, which has lasted for five years, is dying out. Only 329 cases were notified in 1925, as compared with 1,274 in 1924.

THE thirty-fourth Italian Congress of Surgery will be held at Padua from October 25th to 28th, when the following subjects will be discussed: (1) The surgery of the visceral sympathetic, introduced by Professor M. Donati of Padua. (2) The surgical treatment of pulmonary tuberculosis, introduced by Professor Leotta, representing the Italian Society of Surgery, and Professor F. Galdi, representing the Italian Society of Internal Medicine.

THE seventh congress of the German Society of Urology will be held at Vienna from September 30th to October 2nd, when the following subjects will be discussed: the pathology, pharmacology, and treatment of anuria; the pathology and treatment of malignant growths of the bladder. Further information can be obtained from the secretary, Dr. H. G. Pleschner, Alsesstrasse 20, Vienna IX.

THE centenary of Laennec's death was recently celebrated at Plouarec, near Douarnenez, where he died. Addresses were delivered by Professors Chauffard and Marcel Labbé, and Dr. Laigriel-Lavastere.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to *The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.*

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QUERIES AND ANSWERS.

X-RAY TREATMENT OF RINGWORM.

"T. E. R." asks for advice on the use of filters in *x*-ray treatment of ringworm of the scalp. Is any advantage to be gained, he asks, from the routine use of aluminium filters of, say, 1 or 2 mm. thickness, either as regards increased safety or more uniform results in epilation? If so, how is the exposure calculated (taking 4/5 tint B Sabouraud as a safe unfiltered dose), and is the pastille exposed to filtered or unfiltered rays?

was expressive of such thoughts, and the whole congregation was sensible of the beauteous and solemn dignity in which it was executed. The organ was played by the cathedral master of the music, Mr. Goss-Custard. During the assembly of the congregation Chopin's *Marche Funèbre* was played, and the hymns chosen had a dominant note of praise and were exquisitely rendered by the choir.

JOHN HOWARD MUMMERY, C.B.E., F.R.C.S.,

Past-President, British Dental Association.

WE regret to record the death of Mr. John Howard Mummery, at the age of 79, after a short illness.

Mr. Mummery was the son of a dentist, and early cultivated an interest in dental microscopy. He received his medical and dental education at University College Hospital, and obtained the diplomas M.R.C.S.Eng. in 1870 and the L.D.S. in 1873. He was awarded the honour of election as F.R.C.S. in 1923 as a member of twenty years' standing. In recognition of his distinguished services during the war in connexion with injuries of the jaw he received the C.B.E.; the University of Pennsylvania had previously conferred upon him the honorary degree D.Sc. in 1915. He was president of the Odontological Society of Great Britain in 1892, and again in 1908 when the society was incorporated with the Royal Society of Medicine as its Odontological Section. He had held office as president of both the British Dental Association and of the sixth International Dental Congress in London in 1914. He served on the committee appointed by the Medical Research Council for the investigation of dental disease. In 1922 he was awarded the Miller Prize of the International Dental Federation for original scientific research in dental histology.

Mr. Mummery combined a keen interest in scientific research with a literary ability which enabled him to communicate his discoveries freely to others. After a long and patient investigation of dentine he was able to show that it was abundantly supplied with nerve fibres; while his recognition of the importance of comparative morphology combined with embryology in dental science enabled him to make discoveries which won him an international reputation. Advancing years brought with them no diminution of energy, and at the age of 72 he published a book on the microscopical and general anatomy of the teeth, which almost at once became a classic. He contributed numerous papers to the *Philosophic Transactions* of the Royal Society, and within the last two months two important articles by him were published in the *British Dental Journal*.

To his wisdom he added a warm affection for his colleagues and a keen interest in the work of younger investigators in dental anatomy. He spent himself freely in the service of his friends and in devotion to dental science; his loss will be mourned deeply and widely.

Dr. HUBERT TEMPLER DEPREE died in a nursing home at Exeter, after a short illness, on August 30th; his sudden end came as a great shock to his relatives and to all who knew him in the various stages of his career. He was born in 1885, and was educated at Clifton College, where his musical genius was soon recognized. He won the Organ Scholarship at Clare College, Cambridge, but elected to study for the medical profession; he was a prominent member of the University Musical Society, and his skill as a pianist and accompanist was in great demand at concerts and "smokers." On leaving Cambridge he obtained the Organ Scholarship at Guy's Hospital, where his natural aptitude for clinical medicine and surgery was at once evident; he was recognized by his teachers as exceptionally brilliant. He possessed to an extraordinary degree the faculty of absorbing the bedside teaching of the registrars and clinical staff, and this, combined with a rare clinical instinct and an almost devastating common sense, reduced the need of laborious textbook study. He obtained the diplomas M.R.C.S., L.R.C.P. in 1911, and graduated M.B., B.Ch.Camb. in the following year. After holding house appointments at Guy's, and being house-physician to the late Dr. Lauriston Shaw, he went to St. Mary's Hospital as resident anaesthetist, and later returned to Guy's as a staff anaesthetist. On the outbreak of war he immediately joined up as a naval surgeon. After the war he resigned his post at Guy's and entered general practice in Exeter, where he became honorary anaesthetist to the Royal Devon and Exeter Hospital and surgeon to the Exeter Dispensary. He married Miss Lilian Willey, and leaves one son and two daughters. In accordance with his wish, repeatedly expressed, he was buried at sea off the Devonshire coast on September 2nd, a memorial service being held at the same time in Exeter Cathedral.

Dr. JAMES GLOVER, who died from chronic diabetes at Barcelona on August 26th, received his medical education at Glasgow, where he graduated M.B., Ch.B. in 1903. After holding the posts of assistant surgeon to the Eye, Ear, and Throat Free Hospital, Cheltenham, and senior assistant tuberculosis officer to the Royal Hospital for Diseases of the Chest, he spent some years in South America; on his return to England he took part in founding the Psychotherapeutic Clinic in Brunswick Square, London, and was its director until it ceased work in 1922. He spent a considerable time at Berlin studying psycho-analysis under the late Dr. Karl Abraham. At the time of his death Dr. Glover was a member of the council of the British Psycho-Analytical Society, and chairman of the Medical Section of the British Psychological Society. He gave great assistance in the preliminary organization of the London Clinic of Psycho-Analysis which is about to be opened, and had recently been appointed assistant director of it. Dr. Ernest Jones writes: Modest and retiring by nature, James Glover was not widely known in the profession, though his valuable qualities were rapidly compelling increasing recognition. By a small circle, however, he was already recognized as a man of quite unusual gifts. He possessed insight of the highest order into psychological problems, combined with remarkable sagacity and shrewdness of judgement. He was unsurpassed as a practitioner of the psycho-analytic method of treatment. He would easily rank among the first half-dozen psycho-analysts in Europe. His contributions to medical literature, all of a highly technical nature, are mostly contained in the *International Journal of Psycho-Analysis* and the *British Journal of Medical Psychology*. James Glover's death, at the early age of 42, has removed one of the most accomplished figures in a difficult branch of medical research. There is little doubt that had he lived he would in ten years' time have been widely recognized as a worker of commanding importance in this sphere of psychopathology.

Dr. CHARLES VANCE SMITH, who recently died while taking a holiday on the Continent, received his medical education at Sydney University, where he graduated M.B., Ch.M. in 1924. He came to England in the autumn of the same year and engaged in post-graduate work; afterwards he was temporarily attached to the Croydon General Hospital, and held appointments also at the Essex County Hospital, Colchester, and the West Kent General Hospital. A colleague writes: Dr. Smith's bright nature made many friends, and the deepest sympathy is felt with his parents in New South Wales.

The death took place at Turnberry on August 23rd of Dr. S. J. MOORE, a well known practitioner in the west end of Glasgow. Dr. Moore was educated at Glasgow High School and at the University of Glasgow, where he graduated M.B., Ch.B. in 1901 and took the M.D. degree in 1919. Dr. Moore, together with his wife, Mrs. Mary Theresa Moore, who was also a graduate of Glasgow University, took special interest in the diseases of children, and they held appointments as physicians to out-patients at the Royal Hospital for Sick Children in Glasgow. During the war Dr. Moore served as a temporary captain in the R.A.M.C.